

# SAE *Journal*

Published Monthly by The Society of Automotive Engineers, Inc.

A. T. Colwell, President

David Beecroft, Treasurer

John A. C. Warner, Secretary and General Manager

Norman G. Shidle, Executive Editor



## About Authors

■ **KENNETH M. BROWN** (A '35) has been experimental engineer in charge of instrumentation in the diesel engine research laboratory of Caterpillar Tractor Co. since 1936. Before that he was test engineer in the motor laboratory of the Shell Oil Co. An alumnus of Stanford University, Mr. Brown received his A.B. degree with the Class of '30, and a degree of engineer in mechanical engineering in 1932.

■ **ROGER W. GRISWOLD II** graduated from the Sheffield Scientific School of Yale University in 1921. Having studied mechanical engineering, his chief interest soon gravitated to aviation. He organized a flying service at Erie, Pa., in 1924 and later was associated with Curtiss Flying Service, Fairchild Aviation and Sikorsky Aircraft. Mr. Griswold has contributed to aeronautic development, particularly in the field of high-lift devices of the flow-control type. The slotted deflector flap is one of his contributions to the art. He designed and built the smoke tunnel described in his paper, "Visualized Airflow," and is using this equipment in connection with independent research and consulting work in which he is engaged at Old Lyme, Conn.

■ Working in the automotive engineering section of the Socony-Vacuum general laboratories, **W. S. MOUNT** (M '34) has carried on experimental work on gasoline, diesel fuels and lubricating oils. At present, his time is divided evenly among development problems on these three products. He has been employed by Socony-Vacuum since his graduation from Lehigh University in 1931.

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■ Engaged in engineering since 1906, **R. J. S. PIGOTT** (M '18) has a background of accomplishments which includes design and construction of the

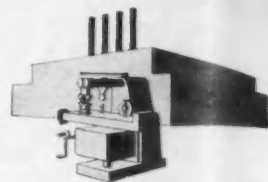
first 30,000-kw cross-compound turbine plant, the design of a light one-man street car, and other developments re-  
(Concluded on page 27)

**C. B. Whittelsey, Jr., Business Manager,**  
29 West 39th St., New York, N. Y.

**E. L. Carroll, Eastern Advertising Manager,**  
29 West 39th St., New York, N. Y.

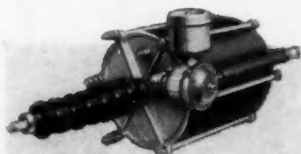
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**Finer and greater plant facilities!**



**Ever-increasing engineering talent!**

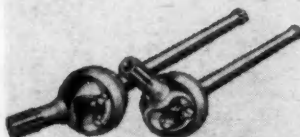
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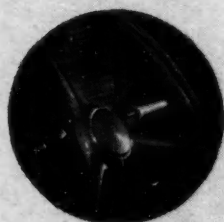
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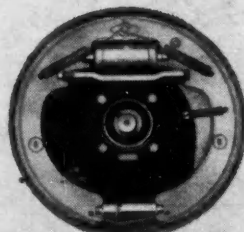
Stromberg Carburetors, foremost in consistent, enduring, good performance.



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The entire automotive industry is today occupied with America's national defense job. And rightfully so, for it is vital to us all. Assured peace must come of it—and meantime, and after it comes, be sure that we shall serve you to the very best of our ability.

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# SAE *Summer Meeting*

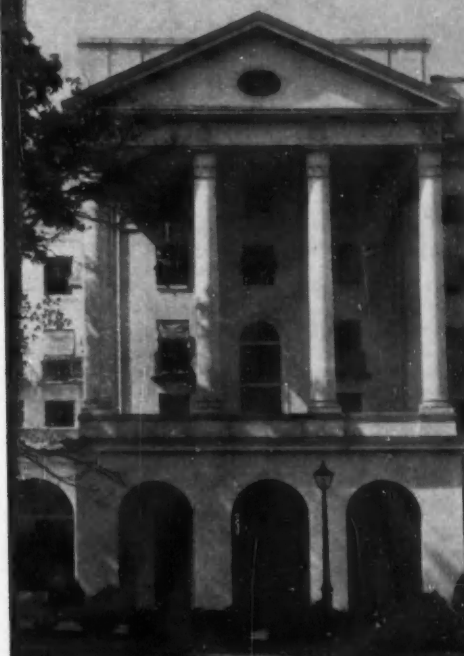
THE GREENBRIER, WHITE SULPHUR SPRINGS

WEST VIRGINIA ★ JUNE 1-6

**A** N exhibit of disassembled parts to supplement  
a description of the famous Daimler-Benz  
DB-601A aircraft engine . . . . . a detailed  
report of how car engineers are redesigning  
automobile parts to use alternate materials  
. . . . . an up-to-the-minute record of techni-  
cal progress in Army tank developments . . . . .  
. . . . . a wide variety of Diesel discussions  
. . . . . truck operation and maintenance  
studies . . . . . and vital papers on current  
fuels and lubricants problems . . . . .

**These are just a few of the timely engineer-  
ing topics to be explored at the 15 technical  
sessions of this 6-day meeting.**

*See pages immediately following for more details*





# Day by Day at the SAE Summer Meeting

## All Week

FROM the opening course at the dinner, Sunday night, until the gavel's rap closes the final Friday session, the 1941 SAE Summer Meeting will be one to merit the attendance of even the busiest engineers engaged in national defense work. Technical papers will bring vital last-minute developments of the industry—and every day will see shirt-sleeved committeemen expediting research, standards and administrative work of the Society.

## Sunday

A GENIAL get-together dinner . . . Pre-meeting discussions . . . A bit of humor by the renowned SENATOR FORD . . . And added gaiety furnished by representatives of the various Sections.

## Monday

BOTH the Aircraft-Engine and the Transportation & Maintenance Activities are sponsoring sessions Monday morning. RAYMOND W. YOUNG, Wright Aeronautical Corp., will tell the "Design Features and Performance Characteristics of the DB-601A Aircraft Engine," the German Daimler-Benz engine that has created so much interest among American engineers. Plans also include an exhibit of its parts.

F. B. LAUTZENHISER, International Harvester, speaks at the morning T&M session on "Load Distribution Factors." Another T&M session is scheduled for the evening, with J. WILLARD LORD, Atlantic Refining, giving pertinent data on "Design Elements Affecting Safety."

The afternoon will be free for informal conferences—perhaps on the golf course or between sets of tennis.

## Tuesday

SIMULTANEOUS sessions Tuesday morning will bring truck and bus engineers together to hear CAPT. JEAN E. ENGLER, QMC, on "Procurement and Testing of Military Motor Vehicles," while aircraft-engine engineers are listening to CARL T. DOMAN, vice president and chief engineer, Aircooled Motors Corp., expound on "Light Airplane Engines and Their Fuel Problems." A "Gas Turbine" talk by DR. J. T. RETTALIATA, Allis-Chalmers Mfg. Co., is also scheduled for the Aircraft-Engine session.

In the evening, "Recent Tank Engineering Developments and Problems," is to be presented by BRIG. GEN. G. M. BARNES, Ordnance Department, U. S. Army; a national defense paper with a wide interest scope. The Truck & Bus Activity is sponsor.

## Wednesday

"PETROLEUM and the War," presented by ROBERT E. WILSON, evaluates America's status and that of the belligerent countries in supply of the product so vital in waging mechanized war.



# White Sulphur Springs, W. Va., June 1-6

## Wednesday (Continued)

fare. Mr. Wilson, who is consultant to the OPM Petroleum Unit and president of the Pan American Petroleum & Transport Co., will speak at the evening "National Defense" session.

Economy is the keynote of the morning/Passenger Car session. JAMES C. ZEDER, Chrysler's chief engineer, will bring fresh new data about the perennial question, "Is It Practical to Streamline for Fuel Economy?" Olds Motor Works' chief engineer, HAROLD T. YOUNGREN, will discuss "Engineering for Better Fuel Economy," and collaborating tire engineers will analyze "The Rolling Resistance of Pneumatic Tires as a Factor in Car Economy." Co-authors are W. F. BILLINGSLEY, (Goodrich), R. D. EVANS (Goodyear), W. H. HULSWIT (U.S.) and E. A. ROBERTS (Firestone).

At the morning Diesel-Engine session, interest will be intense in papers on "Aluminum Alloy Applications for Major Diesel-Engine Parts" and on "Welding Steel Crankcases," by P. B. JACKSON, Aluminum Co. of America, and EVERETT CHAPMAN, Lukens Steel, respectively.

In the afternoon - real old-fashioned SAE Field Day contests.

## Thursday

"MECHANICAL Minds for Motor Cars," by HAROLD E. CHURCHILL, Studebaker Corp., and "Designing for Alternate Materials," by THOMAS A. BISSELL, technical editor, SAE JOURNAL, will be the diversified technical fare at the morning Passenger Car session. At the same time, Diesel engineers will hear J. P. STEWART, Elliott Co., RALPH BOYER, Cooper-Bessemer Corp., and JOHN W. ANDERSON, American Locomotive Co., recite "American Experiences With the Buchi Turbo-Charging System." H. L. KNUDSEN, Cummins Engine Co., will speak on "Problems and Possibilities of Mechanical Supercharging of Diesel Engines," and MARTIN A. ELLIOTT, Explosives Division, Bureau of Mines, will give "A Rational Basis for Correlating Data on Compression-Ignition Engine Performance at Different Intake and Exhaust Conditions."

In the afternoon there will be a report of the CFR Committee on "Evaluation of Diesel Fuels in Full-Scale Engines," read by WALTER G. AINSLEY, Sinclair Refining Co., and a "Review of Temperatures, Road Test Engines," by B. E. SIBLEY, Continental Oil Co.

"The Motor Car Rides With Plastics," by GEORGE W. WALKER, Detroit Industrial Designer, will feature the evening session, at which the motion picture, "The Magic of Modern Plastics," also will be shown.

## Friday

MORNING will see the only Friday session. Sponsored by the Fuels & Lubricants Activity, R. J. GREENSHIELDS, Shell Oil Co., J. M. CAMPBELL, General Motors Research, and W. M. HOLADAY, Socony-Vacuum Oil Co., will report on the "1940 Road Detonation Tests." "The Significance of the 1940 CFR Centralized Road Test Technique to the Engine Builder," will be told by W. E. DRINKARD, Chrysler Corp., and J. T. FITZSIMMONS, Delco-Remy Division, General Motors Corp., will speak on "The Ignition System as Influenced by Fuel Characteristics." In another paper, J. A. MOLLER, Pure Oil Co., will outline "A Proposed Method for Duplicating Road Octane Ratings on the Multicylinder Engines in the Laboratory."



## Make War Transport Plan NOW, F. C. Horner Urges United States

Expert, back from Britain, tells uses of commercial trucks in wartime. Stresses need to plan before emergency exists

### Metropolitan

"FOR God's sake, don't wait until you're under fire to plan!" was the warning brought by Frederick C. Horner from transportation executives and government officials alike who showed him how Britain was striving to meet its holocaust of blitzes.

Speaking before the Metropolitan Section April 17, he recounted the herculean efforts of a blasted nation to stem the tide of mechanized invasion. He was assured by taxi drivers, industrialists, and politicians alike, that they might be killed, but they couldn't be licked. "England under fire is still grand," he said in opening his first public address since returning a few weeks ago from London.

The British Ministry of Transport has established a system of pooling all available commercial trucks and buses, assigning all such units to transport goods, war materials, and people, where most needed, and making them immediately available for emergency service in stricken areas.

Under the national Ministry of Transport is set up a number of district transport administrations, under which in turn are many local administrations. Transportation executives and government officials are co-members of these boards. While setting up the administrative rules they are serving the government, and while carrying out the regulations they act as managers of transportation companies. "This pooling system keeps transportation moving day and night, in spite of blitzes and blackouts, in spite of huge craters in streets, highways, and



Wide World

F. C. Horner, assistant to the chairman of the board, General Motors Corp., and consultant on transportation to the National Defense Advisory Commission, returned on the S. S. Excalibur after studying war transport operations in England as a member of an official United States mission

railroad yards, by careful distribution of the existing transport facilities on land and the sea," he said.

The plan, he said, is working well with almost no instances of playing politics for profit. "We, in the United States, should develop some plan now which could be adopted if the United States ever should have to take over a certain number of trucks—or all trucks—in such an emergency," he said. "If we don't, we will wake up some morning and find someone making plans for us," he warned.

Immediate development of such a plan, he emphasized, would not mean its immediate execution. "It might never be necessary to carry out such a program in the United States," he explained, "but a sound, clear-headed proposal can be developed much more readily while we have time to think and discuss. The best plans don't come out of emergency demands." This was the important message brought by Mr. Horner to the automotive transportation industry as a result of his first-hand study of British experiences.

### Unsung Heroes

Among the unsung heroes of the blitzkriegs, he said, were the men and women who keep transportation and communications moving and open after unbelievable destruction of facilities. Mortality and accident rates are high in these trades, with the necessity for moving freight and passengers through blackouts and among wreckage. Telephone operators become fire-fighters and return quietly and quickly to their switchboards; repairmen work in bomb craters up to their necks in sewage; drivers carefully pick their way through the fog of lightless nights, over roads iced with sleet and strewn with ruins; repairmen patch up two trucks using spare parts from a third. Vehicle and parts manufacturing for other-than-military purposes stopped long ago, he said.

Against this background, Mr. Horner focused attention upon the wives and mothers whose magnificent morale kept up brave cheer in wrecks and shambles that were once peaceful homes. "I wonder how long the spirit of the men of the nation would last were it not for these women who know England will win?" he speculated.

Shelters less than 70 or 80 ft underground are useless against a type of aerial bomb which sinks 40 or 50 ft underground before exploding. However, the most effective individual shelters appeared to him to be the small sheet iron Anderson type. Thousands of people sleep in the subways, he added. Many sections of the London tubes, he said, are more than 100 ft underground. Many of the families who use these at night have no other place to go. Most of the population sleeps in bed, even if part of the house is wrecked.

The least vulnerable building is the steel frame and reinforced concrete type; wooden frame buildings fare reasonably well, but the load-bearing brick construction, he said, is the most vulnerable of all. Most of the buildings of the British cities are of this construction, hence the huge loss of life and property. However, he found London less damaged than he had been led to believe, although he feared for the results of the April 16 bombardment—the worst so far of the war.

The reason the British transportation control plan is so successful, he said, is two-

fold: The plan was developed *before* the war, and no one appears to be thinking in terms of self-interest. It was suggested as a voluntary plan, was developed by the best transportation engineers in all fields, and is being administered largely by experienced motor-vehicle, railroad, and steamship operators.

In effect, there is no private transportation. Passenger-car control is maintained solely by rationing gasoline for private use. Lack of repair parts further decreases use of all vehicles, he pointed out.

Shelters are not used as much as previously. The larger buildings post watchers on the roofs when an alarm is sounded and ring an inside alarm only when they see that the bombing is coming close. As a result many millions of man-hours are saved to the nation. "It is bad psychology to have people running for shelter in holes whenever a raid comes over. Most of the people keep at their jobs until real danger is near," he said.

Chairman Rudolph F. Gagg introduced Clayton Farris to announce the next and final meeting of the Section on May 23. It will be a golf outing and dinner-dance at the Wheatley Hills Golf Club, East Williston, Long Island. Adam K. Stricker, Jr., Meeting's Chairman, made the arrangements for the meeting.

## Aircraft Potency Affects Military Vehicle Design

■ Dayton

The effectiveness of today's military airplanes has influenced design of modern army motor vehicles, Col. Arthur W. S. Herrington told 80 members and guests of the Dayton Section, April 7. In the present war, he pointed out, roads are seldom used in combat zones and military vehicles must be so designed that they can cut across country at any time. The damage that low-flying airplanes inflict on military motor convoys, he added, makes necessary large production for replacements.

Mobility of military vehicles has been greatly increased by developments in the design of pneumatic tires, Col. Herrington declared, pointing out that vehicles equipped with very large pneumatic tires can traverse any kind of terrain and even float and move in marshes.

Four-wheel and six-wheel drive and half-track trucks, in which the front wheels are only used for steering on roads and are powered to lift them over obstacles on cross-country runs, were described by Col. Herrington. The rear wheels, he explained, provide most of the forward traction. The half-track trucks of American design, he said, have from 15% to 20% of their weight on their front axle and are not so successful as the German jobs which have only about 5% of their weight on the front axle.

Col. Herrington explained that on all track-type military vehicles, rubber tracks of short pitch are best for use on roads or sand but bog down quickly when operating in swampy territory. The steel-type track, he opined, seems to be best for all-round military use. He commented that the metals we use in the steel tracks are superior to those used in Europe. It was also pointed out by Col. Herrington that short-pitch tracks allow the necessary speed for military mobility and that on military vehicles the unit ground pressure on the tracks must not exceed 5 to 6 lb per sq in.

Commenting on tanks, Col. Herrington

## Redding Appointed to SAE Staff; Heads Up Aeronautical Activities

**A**DDED to the SAE Headquarters' staff last month was James D. Redding, former assistant chief of the Aircraft Airworthiness Section, Civil Aeronautics Administration. Mr. Redding is staff representative in charge of the Society's aeronautical activities, including expanded standardization undertakings in connection with the Office of Production Management assignment to the SAE of responsibility for standardization work on aircraft engines, propellers, materials and processes, and accessories and equipment; meetings, and other SAE work in the aeronautical field. He succeeds Carleton E. Stryker, who was released by the Society to serve in the Office of Production Management as coordinator of aeronautical standards for national defense.

Mr. Redding had been affiliated with the Civil Aeronautics Administration and its predecessor organizations since 1936. He was named acting assistant chief of the Aircraft Airworthiness Section in December, 1938, and assistant chief of the Section on May 1 of the following year. In that capacity the major portion of his time was devoted to executive engineering duties, particularly in connection with coordination of activities of the Section's four offices located at Washington, D. C., LaGuardia Field, N. Y., Kansas City, Mo., and Santa Monica, Calif. He also handled special administrative and technical problems arising as a result of the rapid expansion of the staff. As representative of the CAA, he was on the materials committee of the National Advisory Committee for Aeronautics and on the executive committee of the Army-Navy-Civil Committee on Aircraft Requirements.

Prior to his affiliation with the CAA, Mr. Redding represented the Consolidated Aircraft Corp. as liaison engineer at Wright Field in connection with the static testing and flight testing of the Consolidated PB2-A pursuit airplane. Earlier he held aircraft

declared that those built in this country are superior in all ways to those of European nations, and that American armor plate is likewise best.

## Mechanized War Ups Ratio Of Workers to Soldiers

■ Pittsburgh

The present war is so mechanized that it is necessary to keep 18 men at machines for every active soldier at the front—as compared with two factory workers per fighting man during the first world war, SAE President A. T. Colwell, vice president, Thompson Products, Inc., told members of the Pittsburgh Section, March 18.

Revealing what is going on "Behind the Scenes in National Defense," Mr. Colwell stated that this country is spending about 8% of its national income for defense. England and Germany, on the other hand, are spending some 60% of their national incomes to meet war expenses; in England war costs take \$13,000,000,000 of an income of \$22,000,000,000.

Much of what Mr. Colwell told his Pitts-



James D. Redding

stress analyst posts with Hall Aluminum Aircraft Corp., Curtiss Aeroplane & Motor Co. and Consolidated, working primarily on military airplanes.

Mr. Redding's technical education was interspersed with work in the aircraft industry. After receiving his A.B. degree from Wittenberg College, he attended the University of Michigan. While there he worked part time in the preparation of layout and detail drawings and stress analyses for various commercial airplanes. After receiving his B.S. in Aeronautical Engineering, Mr. Redding worked during the summer of 1930 as airship structural designer and draftsman for the Goodyear Zeppelin Corp., engaged in the structural design and drafting of main rings and engine rooms of the airship "Akron."

That fall, Mr. Redding entered the University of Michigan Graduate School, holding the Sheehan Fellowship in Aeronautics. His classroom schedule was so arranged that on three days of the week he was able to work with the Stinson Aircraft Corp. as draftsman and stress analyst. He received his M.S.E. in Aeronautical Engineering in 1931.

Mr. Redding's activities as a member of the SAE staff began April 14.

burgh audience has been reported in SAE Journal accounts of his talks before other SAE Sections. Added points were brought out in impromptu discussion which carried the session beyond the usual time for adjournment.

It will take about one year, at the present rate of production, for America to turn out airplanes at the rate Germany now is producing them, Mr. Colwell stated in answer to a question asked by Stephen Johnson, Jr., Bendix-Westinghouse Automotive Air Brake Co. That figure is about 2500 per month, he added. Wishful thinking is to blame for the belief that German airplanes are inferior in workmanship and materials, he declared, noting that those which have been captured show high standards of construction. He also said that while German airplane production seems to be down a little at the present time, it may be that they are retooling for improved design.

Discussion turned to fuels as C. J. Livingstone, Mellon Institute, brought out that one of the reasons for seeming superiority of British fighting planes is that they are using 100-octane gasoline, while the best that the Germans are using is 92 octane. He added that most of the German aviation



gasoline is 87 octane, and that much of their aviation fuel is produced from lignite by the hydrogenation process.

The use of high-octane gasolines and the consequent increases in compression ratios, it was pointed out, is making it possible for latest designs of gasoline engines for tanks and other military equipment to secure many of the advantages formerly reserved for diesel engines.

Fred Haller, Mt. Lebanon Garage Co., asked about carrying tanks by airplanes. Modern bombers, it was stated, carry distributed loads of bombs weighing more than the concentrated weight of a moderate size tank.

Concerning the effect of dive bombing on valves, Mr. Colwell said that while airplane engines are normally held to 2000-2500 rpm, dive bombing might involve engine speeds of 3300 rpm, which means severe inertia strain on the valves, due to their stop-and-go action. Consequently, he continued, inertia has become as important a factor as burning in the design of valves for such severe duty; larger valve stems are needed to help carry off the extra heat.

The question as to why ignition is more difficult at high altitudes brought the explanation that the lower air pressures at high altitudes offers less resistance to the escape of the spark across the outer surfaces of the spark-plug insulators or other points in the wiring harness where the voltage gradient is very high. It was also stated that shorter spark-plug gaps are needed for high-altitude flying and supercharged wiring harness is sometimes used.

Commenting on how the horsepower of airplane engines has been increased from 250-500 hp in the first World War to more than 1000 hp in the present war, Mr. Colwell predicted that 3000-hp engines will be seen in the immediate future and that the engines of fighting planes will eventually reach 3500 or even 4500 hp.

This led Murray Fahnestock, *Ford Field Magazine*, to point out that the *Great Eastern*, the 18,000-ton steamship, which laid the first transatlantic cable, had engines rated at only 11,000 ihp. It seems easier to move weight by water, he commented.

## Cass Makes Predictions

Outlining future trends in engine developments, Robert Cass, who recently was named chief engineer of the White Motor Co., told members attending the Pittsburgh Section's February meeting that, in his belief, the direct injection of gasoline is a future possibility and that the successful gasoline engine of tomorrow, in the truck and bus field, will weigh considerably less per horsepower. He pointed out that engines are now being produced weighing several pounds less per horsepower than those of even 18 months ago.

Performance demands and possible future legislation, he said, are focusing attention on the desirability of increasing the output of the powerplant while at the same time increasing the useful payload. It is interesting to note, he added, that in the last few years there has been an increase of from 75-80 ton-miles per gal of fuel to 120-130 ton-miles per gal at road load. He expects that there will be a continued reduction in fuel consumption during the next four or five years.

Mr. Cass stressed the importance of temperature control in the modern engine and advised controlling water temperature, oil temperature, and the temperature of air

## FIELD EDITORS

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**Tulsa Group** - W. F. Lowe  
**Washington** - L. C. Smith

entering the carburetor so as to maintain, as nearly as possible, summer conditions under the hood.

Individually ported manifolds will be more commonly used in the future and three-ported manifolds are on their way out, Mr. Cass predicted. Better control of mixture in the manifolds is desirable and may ultimately include a water-heated or water-cooled manifold and more stable temperature control of air entering the carburetor, he said. The greatest advance in carburetor design, he added, has been the application of the duplex carburetor in its present form.

Mr. Cass credited gasoline research with a major contribution to progress in fuels and stated that further progress may be expected. It is possible, he contended, that compression ratios may be increased as much as 100% with a resultant increase of economy and power of as much as 40 or 45%. With increased output of engines, he noted, there will be a need for different construction of valves and different valve materials may be necessary. Aircraft development has shown possibilities in this direction, he added.

In discussion, Mr. Cass answered R. M. Welker's (Gulf Oil Co.) question as to how much crankcase ventilation is desirable, with the remark that that is a question designing engineers and engine building companies would like to have answered by the operating companies and oil refining companies.

When discussion veered to the use of various alloys for bearing materials, including copper-lead and indium, Mr. Cass remarked that it might be practical to use the gold buried at Fort Knox in bearings as it would entirely prevent corrosion.

It was B. H. Eaton's (Bell Telephone Co. of Pa.) opinion that control of crankcase temperature is desirable, but that oil coolers present a maintenance problem.

C. J. Livingstone, Mellon Institute, explained that the greatest benefit from heavy-duty equipment can only be obtained when high-octane fuel is used, and that blowby is most troublesome when combustion is incomplete.

## Bachman Chairman of PRA Brake Research Committee

Election of B. B. Bachman as chairman of The Advisory Committee on Motor Vehicle Brake Research, organized under the sponsorship of the Public Roads Administration, took place at the committee's initial meeting, March 21. Mr. Bachman, who is chairman of the SAE Brake Committee, represents the Society on the advisory committee. W. S. James is his alternate.

The advisory committee, made up of representatives of interested non-Government organizations, will advise and assist the Public Roads Administration in a research program on motor-vehicle brakes which it is undertaking with the cooperation of other Federal agencies.

The purposes of the research work are, broadly: to determine what levels of brake performance can reasonably be met by current vehicles in service; to determine the essentials of reasonable brake regulations; to establish a better understanding of certain features of the braking phenomenon; and to determine practical means of enforcing brake regulations.

In general, the study will include analysis of: brake performance characteristics of new and used passenger and commercial vehicles; hand brakes; brake-testing devices; brake linings; and coefficients of friction between tires and pavements at high speeds.

Other organizations represented on the advisory committee are: American Association of Motor Vehicle Administrators, American Mutual Alliance, American Transit Association, Automobile Manufacturers Association, Automotive Parts & Equipment Manufacturers, Inc., Brake Lining Manufacturers Association, Motor & Equipment Manufacturers Association, National Association of Motor Bus Operators and National Conservation Bureau. T. P. Chase, General Motors Corp., is a member-at-large.

Several of these organizations have appointed SAE members as their representatives. Among them are: David Beecroft (MEMA), Dr. F. C. Stanley (BLMA), Ernest E. Wilson (AMA), Harold F. Hammond (NCB) and Martin Schreiber (ATA).

## No Radical Changes In Ignition Equipment

■ Philadelphia

During the past thirty years, improvements have been made in automotive ignition equipment, but no radical changes have appeared commercially, J. T. Fitzsimmons, ignition engineer for the Delco-Remy Division, General Motors Corp., told more than 100 members of the Philadelphia Section, April 9. His topic was "Ignition Systems as Related to Automotive Engine Performance."

An experimental circuit was described by Mr. Fitzsimmons in which the timing element was a camshaft-mounted tube with equally spaced slits through which light fell on a photo-tube. This, he said, controlled a thyatron which, when fired, passed primary current to the spark coil. However, he commented, the electronic equipment gave more trouble than a breaker mechanism and the current consumption was much more than for the standard ignition system.

Breaker designs for various types of duty were illustrated and the speaker quoted



Col. George A. Green (left)



Edward Warner (right)

Wide World

## Green and Warner to England As Harriman Lease-Lend Aids

figures of astronomical proportions for the number of times these contacts must make and break the circuit during their lives.

Condensers, he said, have been improved by size reduction and by better design of the end seal. He noted that some heavy-duty condensers are now made with mica for the dielectric, but that these will not stand much higher temperatures than paper-insulated condensers, because of the low melting point of the foil and solder used. Peak temperatures are attained soon after the engine is shut down after high-load operation, he said, noting that absence of the cooling wind and the presence of the hot exhaust manifold make the temperature rise. Some condensers, he stated, are provided with a heat-insulating jacket for protection during this transition period.

The special feature of coils and distributors, according to Mr. Fitzsimmons, may simply be the insulating material of the cap. A great deal of service trouble with coils, he explained, has been caused by external short circuits across the surface of the insulation when wet. Some plastic molding compounds carbonize under these conditions, which makes them leak even when dry, he explained, adding that the cure is simply the use of superior materials which are available at a moderate extra cost.

Mr. Fitzsimmons illustrated the performance of ignition systems with oscillograph photos and charts. Oscillations with a frequency of 10 megacycles and instantaneous currents of some 400 amp, have been detected, he said. Faulty performance, he continued, can occur even when all components of the system check satisfactorily,

WHEN W. Averill Harriman became President Roosevelt's special representative to Great Britain charged with expediting operations under Lease-Lend Bill provisions, his first act was to appoint as his staff assistants two prominent SAE members—Col. George A. Green and Past-President Edward Warner. Col. Green has been given leave from his post as vice president of engineering, General Motors Truck & Coach Division, Yellow Truck & Coach Mfg. Co., to go to England with Mr. Harriman, while Mr. Warner has leave of absence as vice chairman of the Civil Aeronautics Board.

Both Col. Green and Mr. Warner flew to England via Clipper late in March and have been active on their new assignments ever since. It is expected they will return to the United States periodically in line of duty, since they will be largely concerned with liaison between our "Arsenal of Democracy" and the British recipients of its products. Col. Green is advising on ordnance, machine tools and related problems, while Mr. Warner's work has to do with aeronautic equipment.

Col. Green, who is vice chairman of the

SAE Ordnance Advisory Committee, has been active in ordnance matters ever since he served with the British and American armies during World War I. Recently much of his time has been devoted to fulfilling duties as advisory engineer to the U. S. Army Ordnance Department. He is an outstanding authority on military automotive equipment of all kinds and combines an unusual knowledge of military needs, manufacturing requirements and design possibilities.

Mr. Warner, who was president of the SAE in 1930, has been a leading engineer and administrator in the aeronautic field for many years. Once a professor of aeronautical engineering at Massachusetts Institute of Technology, Mr. Warner was assistant secretary of the Navy for Aeronautics from 1927 to 1930, spent several succeeding years as editor of *Aviation*, was vice chairman of the Federal Aviation Commission in 1935 and was called as engineering consultant to many of the aviation industry's largest companies prior to joining the Civil Aeronautics branch of the Government in 1939.

because high frequencies encountered in the secondary circuit make distributed capacity of the wiring play an important role. Of course, he added, the more common troubles are due to leaky insulation in the high-voltage circuit, low supply voltage or bad condition of the breaker points or condenser.

With drawings and graphs, Mr. Fitzsimmons illustrated and described the design and performance of automatic-advance mechanisms. The centrifugal control, he stated, is so designed that the spark-advance curve can be easily tailored to suit engine performance requirements. He mentioned that the addition of vacuum advance improves economy by about two miles per

gallon, explaining that the vacuum connection is usually located very close in front of the throttle butterfly. For taxi service, where fuel economy during prolonged periods of idling is more important than smoothness, he added, the connection may be placed on the manifold side of the butterfly valve to produce an advance at closed-throttle position.

H. L. Brownback, consulting engineer, presided over discussion, calling on P. M. Heldt, *Automotive Industries*; Adolf Gelpke, Autocar Co.; F. C. Burk, Atlantic Refining Co.; J. P. Stewart, Socony-Vacuum Oil Co.; Emil Kameny, Standard Motor Products, Inc.; Hunt Davis; C. H. Van Hartesveldt, Atlantic Refining Co., and others.

## M-3 Medium Tank Weighs 28 Tons; Speed 25 MPH

■ Milwaukee

General specifications of the Army's M-3 Medium Tank were revealed by Lt.-Col. H. W. Rehm, commanding officer, Detroit Ordnance Plant, at the Milwaukee Section's March 14 meeting. This tank is to be produced at the new Chrysler-operated tank arsenal and is also being built by the Baldwin Locomotive Co.

Weighing about 28 tons, powered by a 400-hp Wright radial aircooled engine, the M-3 has a maximum speed of 25 mph, Col. Rehm stated. He gave its dimensions as approximately 9 ft high, 9 ft wide, and 22 ft long. The turret and certain of the front end parts, he said, are of cast steel weighing a total of about 6½ tons, and another 6½ tons of rolled armor plate is distributed according to the vulnerability of various locations. A single filling of the gasoline tank takes 175 gal, which gives a cruising radius of about 350 miles at approximately 2 mpg, he added.

The armament, Col. Rehm revealed, consists of one 75-mm gun having a 30 deg traverse and a 45 deg elevation; one 37-mm gun with a 60 deg elevation; three 30-caliber machine guns; one 30-caliber machine gun with an elevation of 65 deg, and several light hand machine guns. The crew, he said, consists of 7 men, 6 of whom are seated while the loader of the 75-mm gun must stand while at work.

The M-3 is a rear-engine job with disc clutches immediately ahead of the powerplant, and in front of them a synchromesh 5-speed forward and 1-speed reverse transmission, Col. Rehm told the engineers. Continuing, he said that the drive is through the front end where the Cletrac method of steering is provided. In this steering method, it was explained, the power is always applied to both tracks, but the inner track may be slowed to one-sixth of the speed of the outer track. In describing the tracks, Col. Rehm said that they are made up of 79 shoes, with rubber covering on the contacting surfaces, and are hinged together with rubber bushings so that there is no metal-to-metal contact. They are guaranteed for 2000 miles and last considerably longer, he stated. The bogie wheels and idler at the rear are also rubber tired, so that the only steel contact is with the driving sprocket at the front, he added.

### Tank Suspension Important

The suspension of a tank is of considerable importance, Col. Rehm pointed out, explaining that a stable firing platform is necessary for accurate marksmanship. In the M-3, he said, the load is carried by six bogie wheels on each side, each of which is independently sprung.

Col. Rehm noted that the armor plate is of the latest design which does not shatter when punctured by a projectile. The only danger to the crew, he said, would be from the projectile itself, or the slug of armor plate pierced out, rather than from these parts and also the splinters of armor which are present when normal armor plate is punctured.

The second part of the program was a colored motion picture entitled: "The Magic of Modern Plastics." The picture showed a number of production steps in modern plastics plants and placed particular emphasis on the care exercised to keep the prod-

### Medium? Light?

"I sometimes wonder who invented the names 'medium' and 'light' tanks. They are certainly not medium or light by any other standard. The transmission, alone, of a medium tank weighs 7600 lb—as much as the combined weight of two automobiles."

—William S. Knudsen.

uct clean. It showed that this is of particular importance in fabrication of transparent or translucent plastics where even small dust specks would show up, as they would in glass. The picture traced developments in the plastics industry since 1870, when John Wesley Hyatt won a \$10,000 prize for producing a plastic billiard ball.

## Preble Names Members of T&M Project Committees

Progress in the Transportation & Maintenance Activity Committee's program to extend the Activity's accomplishments in five major divisions of its field (see March SAE Journal, page 31) is reported by T&M Vice President T. L. Preble. He has announced that personnel of the five project committees is nearly complete and that the groups will soon swing into action under the T&M Coordinating Committee, H. O. Mathews, chairman. These projects are headed by vice chairmen of the coordinating committee.

Already accepting appointments by the project vice chairmen are:

**Committee "A"—Special Public Utility Problems:** Randolph Whitfield, vice chairman; J. R. North, Commonwealth & Southern Corp.; R. J. Collins, Kansas City Power & Light Co.; H. R. Grigsby, Oklahoma Gas & Electric Co.; R. H. Clark, Consolidated Edison Co. of N. Y., Inc.; J. Y. Ray, Virginia Electric & Power Co.

**Committee "B"—Maintenance Control & Research:** S. B. Shaw, vice chairman; Errol J. Gay, Ethyl Gasoline Corp.; Harley W. Drake, Pacific Highway Transport; W. A. McCutcheon, Washington Gas Light Co.; E. W. Templin, Los Angeles Department of Water & Power.

**Committee "C"—Fleet Management Problems:** G. D. Gilbert, vice chairman; H. W. Drake, Pacific Highway Transport; E. W. Templin, Los Angeles Department of Water & Power; J. C. Bennett, Tide Water Associated Oil Co.; E. F. Donham, Illinois Bell Telephone Co.; F. K. Glynn, American Telephone & Telegraph Co.; H. R. Grigsby, Oklahoma Gas & Electric Co.; J. W. Lord, Atlantic Refining Co.; J. V. Savage, Municipal Shops & Motor Vehicle Inspection Stations.

**Committee "D"—Equipment and Design Factors:** E. P. Gohn, vice chairman; Henry Lowe Brownback, consulting engineer; John S. Wrenn, Studebaker Sales Corp. of America; J. Willard Lord, Atlantic Refining Co.; Leland E. Wells, Willard Storage Battery Co.

**Committee "E"—Special Bus Problems:** J. A. Harvey, vice chairman; W. J. Cumming, Surface Transportation Corp.; Adam Ebinger, St. Louis Public Service Co.; W. A. Gruse, Mellon Institute; C. O. Guernsey, J. G. Brill Co.; H. E. Simi, Twin Coach Co.; Floyd L. Wheaton, Detroit Street Railways.

## Barrel-Engine Designs Reviewed by E. S. Hall

■ Indiana

"More Power from Less Engine"—E. S. Hall's review of barrel engines, was presented by the author at the Indiana Section meeting of March 21. Almost 200 members and guests turned out to hear Mr. Hall review and enlarge upon the paper he presented at the 1940 SAE Aeronautic Meeting (Published in SAE Journal for December, 1940, Transactions Section, pp. 504-519).

Introduced by Lee Oldfield, Mr. Hall, who is manager, Round Engine Patents, spoke informally, illustrating his talk with a number of slides, some of which he presented for the first time.

During the discussion, R. M. Hazen, Allison Division, General Motors Corp., complimented Mr. Hall upon his presentation of barrel engines without withholding disadvantages of some designs. He spoke of the complicated cooling systems of certain barrel-engine designs, and asked if the figures presented as frontal area in Mr. Hall's data took these into consideration. Mr. Hall's answer was "yes." Mr. Hazen then commented that the frontal area of the Allison engine is 10 ft, rather than 11 ft as shown by the author, and that the same is true for other inline liquid-cooled engines of approximately the same horsepower.

After the close of formal discussion and the meeting was adjourned, some 35 engineers clustered around Mr. Hall and the discussion continued for another hour.

## Rubber and Bearings Topic of Discussion

■ Detroit

Rubber and bearings, two vitally important components of automobiles, received technical treatment at the Detroit Section's March 31 meeting.

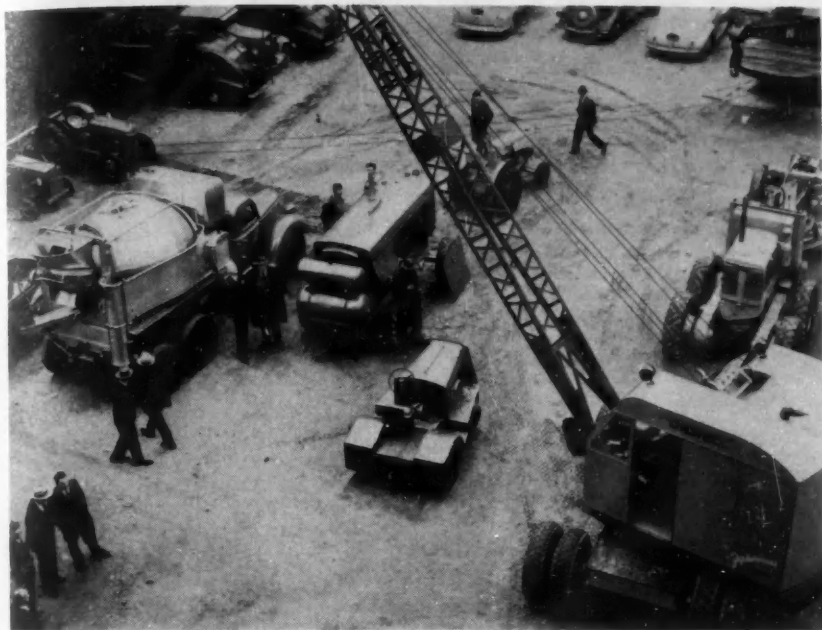
Discussing "Static Fatigue of Rubber," Dr. S. M. Cadwell, director, tire development section, United States Rubber Co., gave as his and his co-authors' definition of static fatigue as "a progressive breakdown under the influence of a static load," as compared with dynamic fatigue, "progressive loss of strength due to successive cycle of stress." Using a number of charts he told results of tests revealing factors affecting the static fatigue of rubber. Collaborating with Dr. Cadwell in preparing the paper, were R. A. Merrill, C. M. Sloman, and F. L. Yost, all of the United States Rubber Co.

Future bearings having a very thin lining of a recognized bearing material backed by steel or steel and an intermediate layer of bronze, were predicted by John K. Anthony, Cleveland Graphite Bronze Co. "As production methods, with respect to bearings and engines improve," he said, "we may expect even thinner linings than are used at the present; the many advantages and superior performance of the Trimetal- and Micro-type bearings having been well established in the field." He reported that these types of bearings have been produced by laboratory methods which have successfully sustained mean unit pressures in excess of 10,000 psi.

Commenting on modern bearings he compared the principal types as to their mechanical strength, bonding characteristics, melting points, anti-friction and non-scoring characteristics, conformability, embeddability, corrosion resistance and fatigue resistance.



# Attendance Tops 1500 at Tractor & Power Engineering Display



Some outdoor exhibits at the Southern California Section's Tractor & Power Engineering Display in Los Angeles, April 11-12. Other exhibits were housed in the nearby Elks Temple. More than 1500 persons viewed the display, which was arranged under the direction of Gus A. Collender

## Five Papers Heard at Two Technical Sessions

■ So. California

More than 1500 persons were on hand for the Southern California Section's Tractor & Power Engineering Meeting and Display, held in Los Angeles, April 11 and 12. Visitors came from all parts of the Southwest and one distinguished guest was SAE Member Julius P. Heil, Governor of Wisconsin and president of the Heil Co.

Interest was keen at the two technical sessions Friday evening. E. E. Simmons, Jr., research assistant, California Institute of Technology, described "A New High-Speed Engine Indicator System," and B. L. Hagglund, assistant western sales manager, Caterpillar Tractor Co., spoke on "The Diesel Track-Type Tractor in National Defense." Students from the University of Southern California and the University of California at Los Angeles presented the technical papers at the Saturday luncheon session. O. W. Sjogren, vice president, Killefer Mfg. Co., and chairman of the Section's Tractor & Power Committee, was technical chairman and presided at the sessions. Gus A. Collender, president of Six Wheels, Inc., managed the engineering display.

Mr. Simmons, inventor of the bonded-metallic resistance strain gage, explained that extending the use of the bonded resistance gage to fluid pressure measurement provides several important advantages over present apparatus, especially for high-speed and high-pressure applications. In one arrangement, he said, a piston or diaphragm actuates a dynamometer bar upon which is attached a strain-sensitive winding. An element of this type, he added may be assembled in a threaded plug for easy attachment to a combustion or pressure chamber. Pressure plugs of good dynamic accuracy capable of static calibration are feasible for pressures as high as those existing in gun chambers, he stated.

## Solid Injection Credited For Diesel Development

■ Buffalo

The introduction of the Bosch solid injection system, in which liquid fuel, under several thousand pounds per square inch, is forced through an atomizing jet directly into the combustion chamber, was the factor which led to the present rapid development of the diesel engine. P. E. Biggar, General Motors Truck Corp., told the Buffalo Section at its March 12 meeting. The early diesels, he said, injected the fuel with air at over 1000 lb per sq in., thus atomizing it during injection. This method, he explained, is costly and difficult to control.

At the present time, Mr. Biggar continued, there is quite a race between the development of the 2-cycle type and the 4-cycle type diesel, with a supercharger to obtain a weight and cost low enough, and performance flexible enough, for passenger car use.

The present diesel, he commented, does not idle smoothly, but the resultant vibration is minimized by proper rubber mounting. The probable cause of the roughness, he added, is the inability to properly atomize the minute quantity of fuel required for idling through the same spray nozzles which do atomize properly under higher load conditions. He explained that there is a minimum rate of flow through any nozzle at which it stops squirting and starts to drip.

Another problem which is still confronting diesel engineers, Mr. Biggar stated, is combustion chamber form—whether fuel should be injected directly into the combustion chamber or into an ante or vaporizing chamber, from which partial burning would

blow the vaporized fuel into the combustion chamber.

Due to the high efficiency of the diesel, Mr. Biggar added, many are being used in trucks, and even more in tractors where weight is not so great a factor.

Summing up, he stated that high thermal efficiency is the diesel's virtue, and weight its hindrance.

Following Mr. Biggar's presentation, sound motion pictures were shown of diesel-powered vehicles in action.



Norman Parrish, University of Southern California (standing at left), was one of three student members who addressed the Saturday Luncheon Session of the Southern California Section's Tractor & Power Engineering Meeting. O. W. Sjogren (standing at right) was technical chairman

A second arrangement, described by Mr. Simmons, utilizes the radial expansion of a tubular structure under pressure to actuate a bonded strain winding. A closed-end tube fitted into a threaded plug, he said, provides a useful indicator pressure element. Through-type tubular gages furnish a simple method of observing pressures existing during fluid flow, as in diesel injection or rifle operation, he commented. Such gages, he added, can be constructed to cover the full range of pressure measurement.

Mr. Hagglund traced the development of the tractor in national defense work from the gasoline-powered models of the World War days to the production of the first diesel tractor in 1921. He then pictured design changes which transferred the diesel tractor from a low-speed heavy piece of equipment to the high-speed unit of today, capable of making from 50 to 60 mph.

The second technical session, a luncheon

meeting on Saturday, was devoted to three papers presented by student members of the Society. "Lubrication Problems of Tractor and Power Engines," by Frank Scott (USC), covered, in particular, oil purification as it applies to tractors and stationary powerplants. N. C. Parrish (USC) discussed "Mechanical Testing of Materials in Engine Construction," and James McKnight (UCLA) told of developments in "Application of Butane to Tractor and Power Engines."

*Tractors, engines, power equipment, earth-moving units, butane equipment, parts and accessories were on exhibit at the engineering display which was set up at the Elks Temple and an adjoining parking lot. One of the features of the display was the world's largest earth moving unit, powered by a 225 hp diesel engine and capable of making 30 mph. It has a capacity of 40 cu yd.*

which replacement parts must be stocked, was given special mention by Col. Lawes, who said that all trucks now being purchased have standardized radiator- and fuel-tank caps, fuel-line fittings, spark-plug sizes, draincocks, reflex reflectors, rear-view mirrors and storage batteries. Standard heavy-duty voltage regulators are used on all except the ¼-ton 4-wheel-drive unit, and a standardized oil filter has been developed. Standardization of panel instruments are being worked out with the committee, he said.

Motor transport schools for training of automotive mechanics for the QMC branch are springing up in widely separated locations, combat arms schools are being established, and civilian trade school facilities are being effectively used, Col. Lawes reported.

Pictures of typical administrative (QMC) and tactical (Combat) vehicles were shown and explained by Col. Lawes and by his fellow officer, Lt.-Col. W. B. Johnson, Holabird Quartermaster Depot.

Fred Lautzenhiser, chairman of the Chicago Section's Transportation & Maintenance and Truck, Bus & Railcar Activity, served as Technical Chairman. He read a prepared discussion by W. D. Reese, chief engineer, International Harvester Co., who emphasized the better arrangements made on Army vehicles for repairs in contrast with this phase of the modern commercial job, and indicated that a high-speed transport truck for long-haul trucking will very likely be a further development to emerge from the Army's truck experience.

Answering a number of prepared questions submitted by W. A. Sears, Col. Johnson said the commercial-type chassis, with certain changes, lends itself to ready use in the administration branch of service.

Tanks, Col. Johnson said, must be fueled every 150 miles. Starting is a problem in cold weather, he acknowledged, since the vehicles are rarely under cover. However, extra volt batteries, he reported, help facilitate starting. Road lighting, to prevent detection, he said, is confined to marker lights, and training is done under blackout conditions.

E. F. Lowe, assistant general manager of the Society, preceding the speakers' program, paid a tribute to the Chicago Section's increase in membership. He also reported that 187 Section meetings held throughout the country last year attracted a total attendance of some 26,000 members and guests. For this record, he credited the excellent planning of the governing boards and committees of the various Sections.

## SAE Works With ICC On Safety Projects

Cooperating with the Safety Section, Bureau of Motor Carriers, Interstate Commerce Commission, the Truck & Motorcoach Division of the SAE Standards Committee has organized a subdivision to work with the ICC group on trailer-hitch and fuel-tank matters. Members of the subdivision are: F. B. Lautzenhiser, International Harvester Co., chairman; Carl J. Bock, General Motors Truck & Coach Division, Yellow Truck & Coach Mfg. Co.; Gavin W. Laurie, Atlantic Refining Co.; W. P. Mitchell, Mack Mfg. Corp.; Charles G. Morgan, Jr., American Trucking Associations; F. M.

(News of Society continued on page 29)

## Importance of Truck Standardization Stressed by Cass and Army Officers

■ Chicago

**P**UTTING the spotlight on the Army's job of acquiring some 300,000 military vehicles in a few short months, a leading truck engineer and two lieutenant-colonels of the U. S. Army gave the Chicago Section, on April 1, a stimulating account of the Army's procurement plan to utilize commercial production with as little change as possible in design; the details of pooling of truck design by manufacturers; a summary of the valuable series of proving-ground tests made on trucks and equipment; and an outline of the maintenance problems of providing spare parts and the development of a crew of 400,000 drivers and mechanics for servicing the new Army trucks. Prior to the meeting, a reception was held for the speaker and Army officers.

Main speaker of the evening was Robert Cass, chief engineer of the White Motor Co., who explained how the close dovetailing of Army requirements with commercial truck production designs is working smoothly in effecting QMC deliveries which, as Lt.-Col. H. J. Lawes, commanding officer, Quartermaster Depot, Camp Holabird, later pointed out, calls for 150,000 trucks by June 30, and a total of 286,000 by November. As an instance of how pooling of engineering design is aiding Army production by making design interchangeable, Mr. Cass cited that under a joint Army and engineering committee, an initial order for 10,000 vehicles was given to several manufacturers, yet the truck design will be interchangeable in all important features. The same is true of standardization on accessories and spare parts under the industry standardization committee, Mr. Cass said.

Comparing progress in design since the first World War, the speaker pointed out that a ¼-ton truck used in 1918 by the Army had a 4-cyl engine of about 35 hp, a 4-speed transmission with total reduction of 24.6:1 and speed of 35 mph, and only rear-wheel brakes. He compared this with the Army's present ½-ton job which has front- and rear-axle drive, has a rating of 85 hp, a total reduction of 30:1, and a speed of about 65 mph. Describing the scout and half-track cars for reconnaissance duty and to replace cavalry units, he said they are armored units, have a speed of 50 mph, are equipped with 2-way radios, and are reported to be ahead of anything of this kind now used in the European War.

Testing of designs on the Army's proving grounds at Camp Holabird and at Aberdeen, Mr. Cass declared, holds much of value for commercial truck users, since the exacting data are recorded on all tests. In the cooling test, he explained, requirements are that overheating may not occur even in weather with temperature of 120 F. Functional accessories, such as fuel and lubrication fittings, must operate on grades as steep as 65%, and ignition and lighting systems must be sealed and capable of operation when vehicle is partially submerged, he said.

Fuel economy is an important consideration, Mr. Cass declared, since the saving of only one mile per gallon on 10,000 vehicles in the course of a 10-hr period would save as much as 245,000 gal, and thereby eliminate fuel-carrying units otherwise needed for this extra fuel. Fuel of high-octane ratings now provided by refiners, gives the U. S. Army vehicles an edge not attained elsewhere, he said.

After his talk, Mr. Cass showed a sound film, "The Army on Wheels," and presented slides illustrating typical mechanized units, old and new, for off-road operation.

### Col. Lawes Discusses

Submitting a prepared discussion, Col. Lawes declared that it is the procurement of tactical vehicles for combat service and field-artillery vehicles for off-road operation wherein the Army's chief problem lies. Another problem, he pointed out, is maintenance of the 286,000 vehicles in the field; this number of vehicles requiring a total of 400,000 drivers and mechanics with a vast system of spare parts distribution and maintenance companies.

Work of the SAE-QMC Advisory Committee in reducing the number of units for

# About SAE Members

**D. W. TOMLINSON**, vice president in charge of engineering, Transcontinental & Western Air, Inc., has been named chairman of a special subcommittee of the National Advisory Committee for Aeronautics to study de-icing problems in aircraft operation.

**E. L. YOUNG**, former factory manager, Laminated Shim Co., Glenbrook, Conn., has been named vice president in charge of production.

Two patents were issued on April 15, Nos. 2238615 and 2238616, to **AUSTIN M. WOLF** covering power transmitting means between the engine and driving axle of motor vehicles. Mr. Wolf recently licensed one of the large air brake manufacturers for exclusive rights in the railroad field of a brake control method for high-speed vehicles.

**FRANK R. WEST** is vice president of engineering, Excel Foundry & Machine Co., Inc., New York, which is manufacturing bombs, fuses and aerial torpedoes for the United States and England.

**WALDO GEORGE GERNANDT**, former chief engineer, Hupp Motor Car Corp., has joined the Briggs Mfg. Co., Detroit, as research engineer in charge of engine development.

SAE Past President **ARTHUR NUTT**, vice president for engineering, Wright Aeronautical Corp., and **ROBERT W. STODDARD**, recently elected vice president of Wyman-Gordon Co., have been named to the Board of Trustees of Worcester Polytechnic Institute. Mr. Nutt graduated from W.P.I. with the Class of '14. Mr. Stoddard received his Ph.B. from Yale University in 1928 and studied for a year at the Harvard Business School before joining the sales department of Wyman-Gordon.

**GUY W. VAUGHAN**, president of Curtiss-Wright and Wright Aeronautical Corporations, has been elected a director of Western Electric Co.

**JACK T. GRAY**, former chief of the Airworthiness Section, Civil Aeronautics Authority, is manager, technical department, Aeronautical Chamber of Commerce of America.

**ROBERT H. DAISLEY**, Eaton Mfg. Co., vice president in charge of the Wilcox-Rich Division, has been elected a director of the parent company. Mr. Daisley was named a vice president of the corporation in 1938, having been affiliated with the Wilcox-Rich division and predecessor company since 1922.

**GERALD FISHER** has been named technical representative for the Socony Vacuum Oil Co. in Washington, D. C. He formerly was supervisor, chemical and control laboratories, General Petroleum Corp. of Calif.

**W. H. RAGSDALE**, former test engineer, aircraft engines, Ford Motor Co., Dearborn, has joined the AC Spark Plug Division of General Motors Corp., Flint, as sales engineer.

**WILLIAM L. BATT**, deputy director, Production Division, Office of Production Management, was awarded the 1940 Henry Laurence Gantt Memorial Gold Medal for "distinguished and liberal-minded leadership in the art, science and philosophy of industrial management in both private and public affairs," at the dinner held in conjunction with the Management Conference on National Defense, April 22-23, under sponsorship of the American Society of Mechanical Engineers. Mr. Batt, in addition to his duties in Washington, D. C., is president of SKF Industries, Inc.; chairman, Business Advisory Council of the U. S. Department of Commerce; chairman, division of engineering and industrial research, National Research Council; chairman of the board, American Management Association, and president, International Committee on Scientific Management.

**W. E. BAPTIST** has been appointed chief inspector, airscrew division, de Havilland Aircraft Pty. Ltd., Sydney, Australia. He formerly was consulting aeronautical engineer in Australia for the de Havilland Aircraft Co. Ltd., England.

**J. H. BOLLES**, who has been assistant sales manager, Delco-Remy Division, General Motors Corp., Anderson, Ind., recently was appointed assistant chief engineer of the division.

**MAURICE J. ZUCROW** recently was named vice president of the Ring Balance Instrument Co., Chicago, manufacturers of industrial instruments.

## Canadian War Appointment



J. L. Stewart

**J. L. STEWART**, general manager of the Canadian Automotive Chamber of Commerce, has been loaned by that organization to the Canadian War Time Industries Board to serve as deputy oil controller for Canada. Mr. Stewart is a past chairman of the SAE Canadian Section and during 1938 and 1939 served as a member of the SAE Council. For the past seven years, he has been active as a member of the Lubricants Division of the SAE Standards Committee.

**THOMAS J. KIELY**, formerly sales engineer, aviation division, American Bosch Corp., has been advanced to sales manager of the division. He has been associated with American Bosch since 1923.

**LOUIS POOCK** has been elected president and general manager of the Sheffield Corp., Dayton, Ohio, a new organization resulting from the merger of the two

## Elected President



Louis Poock

affiliated companies, the Cimatool Co. and the Sheffield Gage Corp., of which he was general manager. Mr. Poock is a former chairman of the SAE Dayton Section.

**R. J. CORY** has joined the Wico Electric Co., Springfield, Mass., as sales engineer with headquarters in Chicago. He was field engineer with the Wisconsin Magneto Co., Milwaukee.

Two SAE members were among twelve graduates of the University of Michigan who received citations for distinguished service at the University's Engineering Alumni Conference. They were **ALEXANDER H. d'ARCAMBAL**, consulting metallurgist, Pratt & Whitney Aircraft, East Hartford, Conn., and **JOHN H. HUNT**, director, new devices section, General Motors Corp., Detroit. Mr. Hunt is chairman of the SAE General Standards Committee.

**CYLDE L. WHITE**, formerly engineer with the Thermoid Co., in Detroit, is now employed in the engineering department of the company's Trenton, N. J., plant.

**TAGE HANSEN**, formerly motor rebuilding mechanic, Waltham Automotive Corp., Waltham, Mass., is now general manager of Brown & Moody, Inc., Cambridge, Mass., manufacturers of engine-driven petroleum pumps.

**REX W. WADMAN**, publisher of *Diesel Progress*, has been appointed general manager of the estate of Russell Palmer's eastern publishing properties. These consist of *World Petroleum*, *Facts About Sugar* and *Canadian Oil & Gas*.

**R. B. JACOBS**, National Research Council, and **F. F. JACOBS**, U. S. Navy Bureau of Aeronautics, have been added to the SAE Aircraft Brake Survey Committee since its personnel was published in the March SAE Journal (page 30). R. B. Jacobs replaces Maurice Holland as representative of the National Research Council.



The Priestley Medal, highest honor bestowed by the American Chemical Society, was awarded to **DR. THOMAS MIDGLEY, JR.**, for outstanding achievement in chemical science, at the Society's 101st meeting. Dr.

#### Medalist



Dr. Thomas Midgley, Jr.

Midgley, who is vice president of Ethyl Gasoline Corp. and chairman of the board of directors of the American Chemical Society, discovered tetraethyl lead as an anti-knock agent for gasoline and is known for his work in refrigerants used in air conditioning. He holds the Nichols Medal of the ACS New York Section and the Perkin Medal of the Society of Chemical Industry. The honorary degree of doctor of science was conferred upon him by Wooster College. Last fall, Dr. Midgley was stricken with infantile paralysis from which he is making progress toward recovery. Despite his disability he is actively directing research work.

**ALEXANDER KURTJ**, formerly engineer and designer with the Babcock & Wilcox Co., Barberton, Ohio, has joined the Riley Stoker Corp., Worcester, Mass., as designer.

**CHARLES A. CHAYNE**, chief engineer of Buick, is a frequent commuter from Flint, Mich., to Hartford, Conn., in his added capacity as chief engineer of the Buick Aviation Engine Division. Mr. Chayne is in charge of design and processing developments of Pratt & Whitney engines in connection with the Buick national defense project which will get underway in a new plant in Chicago. He reports that a large staff of Buick experts are preparing the production layout for the new plant.

**DONAT A. GAUTHIER**, former president of the Alliance Francaise of Detroit, was a recent speaker at the Detroit Historical Museum. He discussed the Detroit City Hall statues of Cadillac, La Salle, Father Richard and Father Marquette.

**FRANK B. WILLIS**, director of sales, Bendix Products Division, Bendix Aviation Corp., has been re-elected president of the Automotive Electric Association. **J. A. SHANK**, manager, parts and service division, Electric Auto-Lite Co., is vice president and chairman of manufacturing.

In order to associate the company name more closely with the product, the Wolverine-Empire Refining Co., Inc., has changed its name to Wolf's Head Oil Refining Co., Inc.

**R. C. COLEMAN**, president, American Safety Tank Co., heads the Kansas City committee making local arrangements for the second annual spring forum of the Safety & Operations Section, American Transit Association, to be held in that city May 5-7. Among SAE members scheduled to participate in the conference are: **NORMAN DAMON**, Automotive Safety Foundation; **R. J. S. PIGOTT**, Gulf Research & Development Co.; **KARL F. WALKER**, Section of Safety, Bureau of Motor Carriers, Interstate Commerce Commission; **FRED B. LAUTZENHISER**, International Harvester Co.; **FRED L. HALL**, Bendix

Westinghouse Automotive Air Brake Co., and **J. L. S. SNEAD, Jr.**, Consolidated Freightways, Inc.

**B. B. BACHMAN**, Autocar Co., chairman of the SAE National Defense Committee, has been appointed to serve on the SAE Ordnance Advisory Committee.

**MAURICE L. KERR** has left the Wisconsin Axle Co., Oshkosh, Wis., to rejoin the engineering staff of White Motor Co., Cleveland. He formerly was chief engineer of the Indiana division of White and chief engineer of Garford Truck, at Marion, Ind.

## With the Military Services

**LT.-COL. M. V. BRUNSON**, Quartermaster Corps, who recently completed a one-month refresher course in operation and maintenance of armored vehicles and on gunnery at the Armored Force School, Fort Knox, Ky., has been assigned by the War Department as Quartermaster of the newly organized 4th Armored Division with station at Pine Camp, Watertown, N. Y.

**LT.-COL. WALTER C. THEE**, Quartermaster Corps, who has been officer in charge, standards branch, engineering division at Holabird Quartermaster Depot, Baltimore, since 1939, recently was assigned to the 53rd Quartermaster Regiment, Fort Bragg, N. C. There he will take charge of the heavy maintenance shop which is manned by the 3rd Battalion, 53rd QM Regiment; L Company, 53rd QM Regiment, to be activated in June; K Company, 53rd QM Regiment Heavy Maintenance, and I Company, 53rd QM Regiment, which is a depot for motor transport supplies. In June, Col. Thee will be called upon to organize B and C Companies of the 205th QM Battalion (gas supply), which will be activated at that time. Col. Thee is vice chairman of the SAE Baltimore Section

and is its representative on the National Sections Committee.

**MAJOR JOSEPH A. CELLA** has been transferred from the 31st Field Artillery, Ford Ord., Calif., to General Staff Corps, Northwest Air District, Spokane, Wash.

**W. H. FISHER**, automotive engineer, Gulf Oil Corp., has been granted leave-of-absence to serve as major in U. S. Army. Major Fisher is stationed at Fort Benning, Ga., as a member of the staff and faculty of the Infantry School, automotive group.

**LT. REINHART E. VOGT**, U.S.N.R., has reported for active duty with the Navy as officer in charge of maintenance and flight instructor at the U.S.N.R. Aviation Base, Grosse Ile, Mich. Prior to reporting for active service, Lt. Vogt was sales engineer, Timken Roller Bearing Co.

**CAPT. SETH B. ROBINSON, JR.**, whose entrance into the army was reported in the April SAE Journal, is in the plans and training section, 101st Field Artillery, Camp Edwards, Mass.

**ENSIGN E. L. CONSIDINE**, U. S. Navy, is chief engineer of the U.S.S. *Argus*. Before being commissioned in the Navy, Ensign Considine was with the Atlas Imperial Diesel Engine Co., Oakland, Calif.

**LT. CHARLES M. HANNUM**, Troop D, 107th Cavalry, is stationed at Camp Forrest, Tullahoma, Tenn. Before entering the Army, Lt. Hannum was machine designer with the National Tool Co., Cleveland.

**LT. JACK C. VANDERFORD**, Field Artillery, has been transferred from duty with The Armored Force Board at Fort Knox, Ky., to duty with the Department of Military Science and Tactics at Purdue University, West Lafayette, Ind., as instructor in basic automotive instruction.

**LT. J. G. GROSCH**, formerly a member of the SAE Student Branch at the University of Wisconsin, is stationed with the 311th Signal Aviation Co., U. S. Army, March Field, Calif.

**J. ARTHUR RICHARDSON, JR.**, aid to superintendent of transportation, Consolidated Gas, Electric Light & Power Co. of Baltimore, has been inducted into the United States Army.

**CECIL E. WEST**, commercial salesman, General Petroleum Corp. of Calif., Los Angeles, has been inducted into the United States Army.



Lt.-Col. Walter C. Thee

**CLARENCE M. BELINN** has joined the Air Transport Division of the Matson Navigation Co., San Francisco. He previously was vice president and general manager of the Kansas City Southern Airlines.

**RICHARD C. STOLTE**, formerly engineer in charge of engine design, Olds Motor Works, has been named engineer in charge central office engineering, Canadian Operations, General Motors Corp., Detroit.

**JOHN OSWALD** has been transferred from the Olds Motor Works to the post of quality engineer, General Motors Corp., Detroit. Mr. Oswald was 1940 SAE vice president representing passenger car body engineering.

Announcement that **W. R. ANGELL** has joined its organization recently was made by the Morrow Aircraft Co., San Bernardino, Calif. Mr. Angell was formerly general manager of the Continental Aeronautic Corp., Burbank, Calif., and prior to that, manager of the aircraft-engine division of Continental Motors Corp., Detroit. In joining Morrow, he acquired a substantial financial interest in the corporation and is taking an active part in the company management.

**E. S. HALL**, manager, Round Engine Patents, recently spoke to more than a hundred members and guests of an SAE group at the College of the City of New York. His topic was "Barrel Engines."

SAE members presenting papers at the 38th semi-annual meeting of the National Petroleum Association in Cleveland last month included: **H. C. MOUGEY**, General Motors Corp.; **A. O. WILLEY**, The Lubri-Zol Corp.; **HUGH HEMMINGWAY**, Kendall Refining Co. and **P. M. ROBINSON**, assistant to the consultant, Petroleum Unit, Office of Production Management.

**ROWE H. COSGROVE** has joined the Olds Motor Works, Lansing, as designer. He formerly was with the Packard Motor Car Co. in the same capacity.

**CHARLES H. COLVIN**, acting chief, instruments division, United States Weather Bureau, has been appointed director of the Daniel Guggenheim School of Aeronautics



**Charles H. Colvin**  
Takes  
Academic  
Post

of New York University, according to an announcement made last month. He will take this post early in September, succeeding **DR. ALEXANDER KLEMIN**, the present director, who has been appointed a Guggenheim professor of aeronautics in order that he may devote more of his time to research.

**H. L. HINCHCLIFFE** has been named lubrication department manager, Toronto Division, Shell Oil Co. of Canada, Ltd. He was assistant division lubrication engineer.

**GEORGE HANSMAN** has been named chief engineer of Tinnerman Products, Inc., Cleveland. Prior to this promotion, Mr. Hansman was sales engineer and assistant to the general manager.

Directors of the White Motor Co., Cleveland, have announced the election of **FOREST S. BASTER** as vice president in charge of engineering, and selection of **ROBERT CASS** to succeed him as chief



**Forest S. Baster**



**Robert Cass**

engineer. Mr. Baster was graduated from Case School of Applied Science and entered the automotive field in 1919 with the Packard Motor Car Co. Before joining White in 1936, Mr. Baster was chief engineer of Lycoming Mfg. Co. Mr. Cass, who was executive engineer before his appointment as chief engineer, is a native of London, England, and a graduate of London University. He came to the United States in 1924 to teach engineering subjects at Harvard University, and two years later joined the White engineering staff.

**JOHN J. McNALLY**, formerly district manager of the White Motor Co. at Pittsburgh, has been named regional manager with headquarters in that city.

The national emergency has brought industry out of the political doghouse and made it the backbone of American defense, **ALFRED P. SLOAN, JR.**, told the Economics Club of Chicago at its April 8 meeting.

**AUSTIN W. STROMBERG** has resigned as editor of *Power Wagon* to become co-publisher, with Walter C. Coffey, of *Motor Truck Journal*, the first issue of which was published in April. Mr. Stromberg and Mr. Coffey are well known in the trade publication field and bring to their new enterprise a background of over 15 years in the truck business. Mr. Stromberg has been SAE Journal Field Editor for the Chicago Section for the past five years, and will continue to keep the Journal posted on Chicago meetings and happenings.

"This Defense Production" was the topic of a talk by **C. F. KETTERING**, vice president of General Motors Corp., at the March 28 meeting of the Engineering Society of Detroit. Mr. Kettering is one of the endorsers of the E.S.D. undertaking to list technical qualifications of engineers in the Detroit area as a national defense move in cooperation with the National Roster of Scientific and Specialized Personnel.

Students at the Chrysler Institute of Engineering recently heard **RICHARD B. SNEED**, research engineer, Ethyl Gasoline Corp., speak on "An Investigation of the Effect of Supercharging on the Performance of a 331-cu-in L-Head Commercial Vehicle Engine."

**THOMAS G. MUIR** has joined the Atlantic Refining Co., Philadelphia, as field supervisor, automotive transportation department.

**LYNN H. SUMPTER**, formerly a member of the SAE Student Branch at the University of Michigan, is now with the Indiana Ordnance Works of E. I. duPont Co., Charleston, Ind., as power shift supervisor.

"It takes a 5-ton, 19-ft multiple-spindle bar machine two and a half days, working 24 hr a day, to turn out enough bullet cores to keep one machine gun firing for a single hour," **TELL BERNA**, National Machine Tool Builders' Association, told a

## About Authors

(Concluded from page 13)

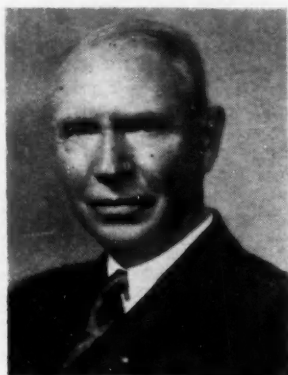
sulting in 22 patents on safety devices, rotary pumps, valves, pressure gages, testing equipment and other devices. His present post is staff engineer with Gulf Research & Development Co., in charge of engineering research for Gulf Oil Companies. He is past president of the American Society for Measurement Control, past vice president of the American Society of Mechanical Engineers, and a member of some 15 national society committees.

■ After receiving his A.B. from Wittenberg College in 1928 and his M.E. from Pratt Institute two years later, **A. E. TRAVER** started in the automotive laboratory of the Standard Oil Co. of N. Y. He has continued in this phase of work with the present company—Socony-Vacuum Oil Co., Inc. His activities have included research on combustion in gasoline and diesel engines, as well as experimental work on lubricating oils for all types of internal-combustion engines. At present he is engaged in the application of instruments to automotive laboratory research studies.

recent speed-armament conference in Cleveland. The real contest in war, Mr. Berna declared, now lies among the fighting man power of ordnance works.

**DR. ARTHUR W. BURWELL**, vice president and technical director, Alox Corp., Niagara Falls, N. Y., will receive on May

#### Honored



Dr. Arthur W. Burwell

20 the Jacob F. Schoellkopf Gold Medal for meritorious chemical achievement, from the Western New York Section of the American Chemical Society, for his work on the oxidation of petroleum to produce materials which are useful as special lubricants and rust preventatives. He is a member of the SAE Crankcase Oil Oiliness Research Committee.

"Experience in England has shown that not only must planning for civilian protection be made by municipalities and counties, but that vital areas must be considered as unified regions for defense purposes," **FREDERICK C. HORNER** told a recent meeting of the New York Regional Plan Association, of which he is president. Mr. Horner, who is assistant to the chairman, General Motors Corp., recently returned from a visit to England as a member of the War Department's commission of study.

## Defense Projects Speeded; Plants Report Progress

**A**LREADY 784 major defense projects are at top speed, William S. Knudsen, director of the Office of Production Management said last month. The machine tool industries, he commented, are producing "magnificently," with men working six and seven days a week turning out machine tools at the rate of \$750,000,000 annually.

Discussing raw materials, he said that during the past year monthly production of aluminum ingots has increased from 25,000,000 lb to more than 40,000,000 lb, and that great additional plants are under construction which should boost aluminum production to the rate of 70,000,000 lb per month by the end of 1941. Capacity of the magnesium industry has been doubled, he reported, adding that plants now under construction should increase it six-fold.

In an April 15 announcement, Guy Vaughan, president of Wright Aeronautical and Curtiss-Wright, stated that an all-time monthly high in the output of Cyclone and Whirlwind aircraft engines, a total of 1,-

430,000 hp, was reached in March—a 500% increase over September, 1939, when the European war started. He predicted that output of the company's five Paterson, N. J., plants would reach 1,780,000 hp monthly by July, and will be augmented even more when the company's Cincinnati plant gets into full production. Manufacturing operations were started in Cincinnati April 14, just 142 days after ground was broken.

General Motors is now in production, months ahead of schedule, on its \$61,000,000 machine gun order, according to an announcement by GM President Charles E. Wilson. He spoke of machine gun lines in operation in GM plants in Flint and Saginaw, Mich., and a stock of machine guns which is being built up, ready when called for by the Army. "These latest additions to America's rapidly rising mountains of defense materials," he declared, "are a sample of what the automotive industry can do in producing non-automotive defense products."

## Song Writer

**FREDERICK C. RUSSELL**, automobile writer, proprietor of Russell Service, West Hartford, Conn., entered the list of SAE song writers last month with the publication by Broadcast Music, Inc., of his two songs, "You Remind Me of Ida," and "Who Can Be Lonely?"

The "Ida" song, which he wrote in collaboration with his wife, is a sequel to the famed "Ida, Sweet as Apple Cider," that Mrs. Russell's uncle, Eddie Munson, composed with Mins-tral-Man Eddie Leonard some 45 years ago.

The January SAE Journal announced the publication of "I Saw You First," by **MACY O. TEETOR**, in charge of research engineering, Perfect Circle Co. Mr. Teetor also wrote the words of the popular number, "Lost," published a few years ago.

**W. JOSEPH CULLEN** has been named managing editor of the Chek-Chart Corp., succeeding **PAUL W. WEBB**, whose af-



W. Joseph Cullen  
Managing Editor

iliation with Chrysler Corp. was announced last month. Mr. Cullen was formerly associate editor.

## Lubricants Group Added to National Defense Committee

A new committee in the Society's national defense set up, the SAE Lubricants Advisory Committee, has been established by the Council for the express purpose of advising with the Government, as requested, on automotive lubricants matters. It will function under the SAE National Defense Committee.

Appointed by President Colwell to serve on the new committee are: J. B. Macauley, Jr., Chrysler Corp., chairman and representative on the SAE National Defense Committee; John M. Campbell, Research Laboratories Division, General Motors Corp.; J. B. Fisher, Waukesha Motor Co.; Raymond Haskell, The Texas Co.; W. M. Holaday, Socony-Vacuum Oil Co., and C. G. A. Rosen, Caterpillar Tractor Co.

The Lubricants Advisory Committee is now cooperating with the National Bureau of Standards.

Personnel of the SAE committee is identical with that established by the Cooperative Fuels Research Committee for advisory work on automotive fuels.

## Obituaries

### J. W. Wilford

J. W. Wilford, president of the Melling Forging Co., Lansing, Mich., and president of the Bank of Lansing, died April 7. He was 63 years old, and had been a member of the Society since 1922.

At the age of 13, Mr. Wilford started serving his apprenticeship as die maker, later extending his technical education by correspondence school courses and practical experience. He rapidly advanced to responsible positions in machine tool companies and was called in to take charge of all designing of tools and machinery for the Harrison Automobile Co. in 1909. He later became general manager of Omega Separator Co., Reliance Engineering Co., Michigan Crankshaft Co., Emergency Forge Co., and National Engineering Co. He continued as general manager of the Michigan Crankshaft Co. when it became a division of General Motors and subsequently held the same post with the Central Products Co., Division of General Motors. He joined the Melling Forging Co. in 1923.

### John Schaefer

John M. Schaefer, automotive engineer and superintendent of maintenance, Brooks Transportation Co., Inc., Richmond, Va., died on March 8. He had been affiliated with the automotive industry since 1903 and associated with such pioneer companies as Pope-Hartford, Corbin and Knox.

Mr. Schaefer operated his own repair shop from 1911 to 1916. The following year he entered the U. S. Army and was assigned to automobile repairing. After being mustered out he joined Adolf Gobel, Inc., Brooklyn, as superintendent of transportation. He later became automotive engineer, Cities Service Oil Co., New York, continuing in that post from 1937 until joining Brooks Transportation in 1941.

He was 52 years old and had been a member of the Society since 1930.



# NEWS OF SOCIETY

(Continued from page 24)

Reid, Fruehauf Trailer Co., and T. C. Smith, American Telephone & Telegraph Co.

Another group, a recently organized subdivision of the Electric Equipment Division, SAE Standards Committee, is cooperating with the Safety Section on work covering wiring installation and performance of electrical circuits on motor vehicles in service. The personnel of this subdivision, which is functioning under the chairmanship of L. O. Parker, Delco-Remy Division, General Motors Corp., includes: R. H. Mount, Essex Wire Corp.; H. H. Wermine, Belden Mfg. Co.; Fred H. Wetzel, Electric Auto-Lite Co.; H. B. Donley, Columbus Metal Products, Inc., and F. M. Reid, Fruehauf Trailer Co.

## All Student Program At Section Meeting

■ Indiana

Members of the SAE Student Branch at Purdue University took over the Indiana Section's April 11 meeting, and provided a technical fare which won praise from the regular Section members. Students participating were seniors in either automobile or aeronautic options at Purdue.

Student Branch Chairman Kenworthy J. Thompson presided after being introduced by Section Chairman Earl C. Booth. The first speaker to take the floor was La Rae Teel, senior aeronautical student, who described the workings of the Civilian Pilot Training Program as operated at Purdue and other universities.

Tracing the brief history of the project, it originated in 1938, Mr. Teel told of its expansion from a \$100,000 program to a \$35,000,000 undertaking. At Purdue, 50 students were being trained in the primary course and 20 in the secondary course each semester—including the summer session, he said, noting that CPTP budget recently was slashed and that a subsequent curtailment seems to be in the offing.

Students taking the primary course, he reported, pay \$25 and receive nearly \$300 worth of flight training in addition to 72 hr of ground instruction. Advanced training costs the student \$34 and gives him some \$800 worth of flight training plus additional ground school training.

Purdue seniors T. J. Thompson and W. E. Wagar, who are collaborating in an investigation on momentum and vibratory effects in gasoline-engine manifolding as a thesis project, told of their work, graphically illustrating the results of their tests. Curves were shown which indicated a pronounced effect on cylinder pressures of pressure waves in straight-tube manifolds.

Specifications for an ideal aeronautical laboratory were outlined by W. R. Woodward in a discussion of the new laboratory under construction at Purdue. His presentation included a synopsis of experimental work that has been done and is being done by seniors in the aeronautic option. He gave a graphic picture of a university with a large student group gone aircraft-engineering minded. This activity is under the direction of Prof. Karl D. Wood and Associate

Prof. Joseph Liston, a vice chairman of the SAE Indiana Section.

M. L. Smitley, senior automotive student, gave results of his thesis study which show interesting correlation between spark setting and the various grades of fuel on passenger-car performance.

The close relationship existing between the Indiana Section and the Purdue Student Branch was emphasized throughout the meeting. This is the third year that the students have taken complete charge of arrangements for a Section meeting.

## Telephone Company Host To SAE Club of Denver

The Mountain States Telephone & Telegraph Co. was host to the SAE Club of Colorado, April 8, presenting four motion pictures on telephone topics, two of which showed the part played by automotive equipment in repairing damage wrought by hurricane and in plowing in underground cable. The other films pictured the assembly of a hand telephone and the difference between the coaxial cable and the regular cable.

The moving pictures were followed by a demonstration of the operation of dial telephones and dial telephone switchboards.

Some thirty members of the SAE Club of Denver attended the group's March 4 meeting. H. D. Rudd, a representative of the Carborundum Co., presented a motion picture on "Carborundum and Its Uses." It pictured the manufacture of abrasives and grinding wheels and showed their applications in industry.

## Car Control Topic of Joint Rochester Meeting

■ Buffalo

The SAE Buffalo Section joined with the Rochester Section of the ASME and the Rochester Engineering Society in sponsoring a joint meeting in Rochester under the auspices of the ASME group, March 27.

The speaker was D. F. Toot of the engineering division, Chrysler Corp., who presented "Advanced Method of Car Control," jointly prepared with C. A. Neracher of the same division.

Describing in some detail the combination of the hydraulic coupling and semi-automatic transmission currently used on some Chrysler products, Mr. Toot explained the advantages of this type of drive. He spoke particularly of "left-foot braking" made possible through the elimination of gear shifting and clutch pedal work. By training the left foot to do the braking, he said, it is more simple to start the car on a hill, to park, and to drive through heavy traffic. "In the past few years," he declared, "it has been determined beyond doubt that fatigue is one of the major contributions to traffic accidents." He showed that with the new Chrysler car control many driving operations are eliminated; reducing fatigue and therefore contributing to safety as well as to making car driving simpler and smoother.

## Horine Heads New SAE Tire Committee

The SAE Tire Cooperating Committee, a special committee of the Society recently authorized by the Council, has been formed to study tire problems and to work on them in cooperation with the standards committee of the Tire & Rim Association. Merrill C. Horine, Mack Mfg. Corp., is chairman of the group. Working with him are: John Erskine, International Harvester Co.; F. K. Glynn, American Telephone & Telegraph Co., and W. S. James, Studebaker Corp.

The function of the Tire Cooperating Committee, and such subcommittees as it may organize, is to study tire problems, to work on them in cooperation with the standards committee of the Tire & Rim Association, and to develop, and transmit to that group, automotive viewpoints on tire matters. The SAE committee, however, will not engage in tire standardization since this is the province of the Tire & Rim Association.

The SAE Tire Cooperating Committee was formed on the recommendation of the SAE Motor Truck Rating Committee. Subcommittees of that group have been cooperating with the Tire & Rim Association's standards committee on simplification of commercial tire sizes. This work developed many angles which bore little or no relation to the truck rating problem, and the committee urged that this work be continued and extended under the sponsorship of a special committee.

## Neoprene's Properties Discussed by Clark

■ Washington

"Natural rubber has never been reproduced," A. F. Clark, E. I. du Pont de Nemours & Co., declared at the Washington Section's April 8 meeting. He explained, however, that synthetic rubber-like materials have been made which are in many respects superior to rubber, and that one of these is neoprene. Mr. Clark's paper was of particular interest because the OPM had placed neoprene on the defense priorities list only a short time before.

Tracing the manufacturing process in the production of neoprene, Mr. Clark stated that neoprene products are finished with the same equipment that is used for finishing rubber articles. Vulcanized neoprene products, he said, retain their shapes at elevated temperatures and do not soften as is the case with rubber compounds. Other neoprene advantages, he continued, are the strength, abrasion resistance and elasticity of rubber products, and superior resistance to the deteriorating effects of oil, sunlight, chemicals and aging.

Mr. Clark emphasized that neoprene is not intended as a substitute for rubber, but was developed for severe service conditions for which rubber products are not suited. About 75% of neoprene production, he stated, is used in applications where oil resistance is a factor. Automotive uses, he added, include ignition cable sheathing, belting, hose, packing and diaphragms. As many as 60 different neoprene parts are used in automobile chassis, he said.

"The Story of Neoprene," a motion picture showing its manufacture and applications, supplemented Mr. Clark's talk.

(News of Society continued on page 31)

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# SAE Coming Events

**June 1-6**

**Summer Meeting**  
The Greenbrier - White Sulphur Springs, W. Va.  
(For details see pages 15-17)

**Sept. 25-26**

**National Tractor Meeting**  
Schroeder Hotel - Milwaukee, Wis.

**Oct. 23-24**

**National Fuels & Lubricants Meeting**  
Mayo Hotel - Tulsa, Okla.

**Oct. 30-31 & Nov. 1** **National Aircraft Production Meeting**  
Biltmore Hotel - Los Angeles, Calif.

**Baltimore - May 15**

Engineers Club; dinner 6:30 p. m. Discussion of present-day problems.

**Canadian - May 16**

Genosha Hotel, Oshawa; dinner 6:30 p. m.

**Chicago - May 2**

Buda Co. plant, Harvey, Ill. Closed meeting for SAE members only. Inspection trip and technical meeting.

**Cleveland - May 23**

Chagrin Valley Country Club. Annual Outing.

**Dayton - May 12**

Gibbons Hotel; dinner 6:30 p. m. Joint meeting of SAE Dayton Section and Dayton Chapter No. 18 of the American Society of Tool Engineers. Behind the Scenes in National Defense Engineering - A. T. Colwell, vice president, Thompson Products, Inc., and president, SAE.

**Detroit - May 19**

Hotel Statler; dinner 6:30 p. m. "Coffee Talker" - Alex Taub, representative of the British Air Ministry. Speakers and subject to be announced.

**Indiana - May 16**

Antlers Hotel, Indianapolis; dinner 6:45 p. m. Closed meeting for SAE members only. Development of the Allison Aircraft Engine - Ronald M. Hazen, vice president and chief engineer, Allison Division, General Motors Corp.

**Metropolitan - May 23**

Wheatley Hills Golf Club, East Williston, Long Island. Spring Golf Tournament.

**Milwaukee - May 16**

Elizabethan Room, Milwaukee Athletic Club; dinner 6:30 p. m. Behind the Scenes in National Defense Engineering - A. T. Colwell, vice president, Thompson Products, Inc., and president, SAE.

**New England - May 23**

Engineers Club, Boston, Mass.; dinner 6:00 p. m. Behind the Scenes in National Defense Engineering - A. T. Colwell, vice president, Thompson Products, Inc., and president, SAE. Guest - John A. C. Warner, secretary and general manager, SAE.

**Philadelphia - May 14**

Overbrook Country Club. Annual Outing.

**Oregon - May 9**

Lloyds Golf Club, Portland; dinner 6:30 p. m. Presenting Oregon State College Student Branch Prize Papers.

**Northern California - May 13**

Hotel Leamington, Oakland; dinner, 6:30 p. m. Subject - Aviation.

**Southern California - May 9**

Elks Temple, Los Angeles; dinner 6:30 p. m. Diesel meeting.

**Southern New England - May 22**

Shuttle Meadow Club, New Britain, Conn. Annual Outing. Golf during afternoon. Dinner 6:30 p. m. Behind the Scenes in National Defense Engineering - A. T. Colwell, vice president, Thompson Products, Inc., and president, SAE. Guest - John A. C. Warner, secretary and general manager, SAE.

**Washington - May 13**

Garden House, Dodge Hotel; dinner 6:30 p. m. Timken Tapered Roller Bearings - T. V. Buckwalter, vice president, Timken Roller Bearing Co.

(News of Society continued from page 29)

## Canadian Oil Production Exceeds That of Germany

■ Canadian

Canada produces more petroleum than Germany, some 150 members and guests of the Canadian Section were told, March 19, by Dr. H. R. Wolf, head of the department of general chemistry, General Motors Research Laboratories. The present war, he said, might be termed a petroleum war, inasmuch as it is being fought by and for petroleum. He proffered the opinion that the new synthetic oil producing plants erected in Germany have done no more than to offset the production of those damaged and put out of commission by R.A.F. bombing.

These comments were made by Dr. Wolf in introducing his paper, "Crankcase Oils for Heavy-Duty Service," which is published in full in the Transactions Section of the April SAE Journal. Dr. Wolf was presented to the Section by Past Chairman C. E. Tilston, Imperial Oil Ltd.

Section Chairman Norman H. Daniel presided at the meeting, and thanks for Dr. Wolf's presentation were expressed by Vice Chairman R. W. Richards. A reception was held prior to the meeting at which the Shell Oil Co. of Canada, Ltd., was host.

## Reports Improvement In Compounded Lubricants

■ No. California

Compounded lubricating oils now on the market are very much superior to those of a year ago, stated Dr. Ulric B. Bray, consulting petroleum technologist, Los Angeles, in presenting his paper "New Lubricants" to a well attended April meeting of the Northern California Section. Drawing on material presented originally at the National Fuels & Lubricants Meeting at Tulsa, Okla. (SAE Journal for December, 1940), Dr. Bray traced the development of, and reasons for, compounding lubricating oil.

To produce qualities not previously available or needed in a lubricating oil, is the object of compounding, he stated, and added that the first problem - that of ring sticking - was solved by the addition of metallic soaps. Later, he said, compounds were added to decrease carbon deposits; and still others added to reduce scuffing, seizing and scratching. With lube oils so compounded, the wear rate is reduced to one-quarter the amount when using the best straight mineral oil, Dr. Bray stated.

In discussing the qualities of a good lubricating oil, Dr. Bray mentioned the following: detergency, to help keep deposits from sticking to surfaces; high film strength, to decrease scuffing or welding tendencies; oiliness, to reduce wear under normal operating conditions; low carbon-forming tendency, to reduce the amount and kind of deposits; stability, to withstand heat and oxidation; and alkalinity to neutralize whatever acids may form. This last requirement and its successful solution is the item which separates the "new" compounded oils from the "old" compounded oils of last year, explained Dr. Bray.

Discussion, under the technical chairmanship of Fred W. Twining, Twining Laboratories, brought out many additional points. Sidney B. Shaw, Pacific Gas &



Electric Co., asked if there would be any disadvantage in using compounded oil in gasoline engines, and was advised by Dr. Bray that although compounded oils definitely are required for heavy-duty diesel engines, they are finding application also in gasoline engines.

Mr. Shaw's next question: "Are there any tests to determine when a compounded oil is exhausted?" brought forth comments from several oil company engineers. Dr. Bray stated that an acidity test could be made fairly easily and that a reading of  $1\frac{1}{4}$  or below would indicate an oil to be safe. A. G. Marshall, Shell Oil Co., pointed out that acidity is not enough evidence to check usefulness of a lube oil; and E. E. Charles, General Petroleum Co., added that the method of conducting the acidity test greatly alters the results, and thus renders such a test inconclusive.

In answer to a question by Mr. Charles, Dr. Bray stated that considerable work is being done to develop paraffin-base oils, but that at present naphtha-base oils are more suited to the additives now available. However, the difference between naphtha-base and paraffin-base compounded oils is nearly negligible when compared to straight-run mineral oil, added Dr. Bray.

Filters came in for considerable discussion

with the question as to the effect of a filter in keeping acid down. Dr. Bray summed up the situation by stating that fuller's-earth type filters, while satisfactory on straight mineral oils, would not do for compounded oils as it removes the additives. Most cotton waste type filters, on the other hand, would not remove either the additives nor the carbon. The solution, he stated, would be to select a filtering mass which would take out the carbon and soot, and yet leave the additives. Present filter development is along this line, said he.

## SAE Student Branch Sees Picture; Visits Chrysler

### U. of Michigan

Some 50 members and guests of the SAE Student Branch of the University of Michigan met March 6 to witness the moving picture, "Diesel, the Modern Power." The picture illustrated elementary principles of four- and two-stroke diesel cycles, and their applications.

On March 10, members of the Branch and Professors W. E. Lay and J. M. Nickelsen, joined other SAE student members in the Detroit area as guests of the Chrysler Corp. at its Highland Park Plant.

Pump Engrg. Service Corp., 12910 Taft Ave., Cleveland.

Pittenger, Tress E. (M) factory manager, Firestone Tire & Rubber Co., Akron, O.

Priestman, Bewley D. (J) sales department, Hercules Motors Corp., Canton, O. (mail) 1407 Market Ave., N.

Sutherland, Robert Louis (J) development engineer, Firestone Tire & Rubber Co., Akron, O. (mail) 778 Coburn St.

Tran, M. A. (M) chief metallurgist, Park Drop Forge Co., 730 E. 79th St., Cleveland.

White, Vern S. (M) engine designer, White Motor Co., 842 E. 79th St., Cleveland (mail) 1942 E. 75th St.

### Dayton Section

Bain, Walter G., Capt. (SM) U. S. Army, Air Corps, Materiel Division, Wright Field, Dayton.

Curtis, Russell R. (M) executive vice president, Curtis Pump Co., 8 Norwood Ave., Dayton.

Daum, George A. (A) assistant superintendent, Frigidaire Division, General Motors Corp., Plant No. 2, Dayton (mail) 2123 Revere Ave.

Gaylord, Foster R. (J) superintendent of maintenance, Columbia Terminals Co., Inc., 2506 Norwood Ave., Norwood, O.

### Detroit Section

Anderson, Marvin R. (M) vice president, Michigan Tool Co., 7171 E. McNichols Rd., Detroit.

Biggers, Robert L. (M) president, Fargo Division, Chrysler Corp., 7900 Jos. Campau Ave., Detroit.

Blocher, O. G. (M) chief draftsman, Stinson Aircraft Division, Vultee Aircraft, Inc., Wayne, Mich.

Doolittle, J. H., Major (SM) assistant supervisor, central procurement district, U. S. Army, Air Corps, 8505 W. Warren Ave., Detroit.

Drader, Joseph C. (M) works manager, Michigan Tool Co., 7171 E. McNichols Rd., Detroit.

Dunn, George Edlin (M) chief engineer, Universal Products Co., Inc., Dearborn, Mich. (mail) 23632 Rowe Ave.

Ellor, James Edwin (M) chief development and research engineer, Rolls-Royce, Inc., 2-251 General Motors Bldg., Detroit.

Fontaine, A. P. (M) chief engineer, Stinson Aircraft Division, Vultee Aircraft, Inc., Wayne, Mich.

Greenhill, F. Cyril (A) vice president, sales manager, Acklin Stamping Co., 1925 Nebraska Ave., Toledo, O.

Heller, Clifford Milton (M) chief engineer, Bingham Stamping Co., 1062 Post St., Toledo, O. (mail) 1568 Hagley Rd.

Henderson, Romey Archibald (M) industrial teacher, Detroit Board of Education, Department of Vocational Education for National Defense, Detroit (mail) 225 E. Canfield.

Little, Joseph Prescott (M) vice president, General Motors Truck & Coach Division, Yellow Truck & Coach Mfg. Co., Pontiac, Mich.

Mainzinger, Harry O. (A) sales engineer, Budd Induction Heating, Inc., 12141 Charlevoix, Detroit.

McGrath, Edward J. (A) sales representative, Risdon Mfg. Co., Naugatuck, Conn. (mail) 5-118 General Motors Bldg., Detroit.

Moore, Edward Joseph (J) branch manager, Detroit Ball Bearing Co., 115 Ionia Ave., N.W., Grand Rapids, Mich.

Moore, R. John (J) secretary, sales engineer, Detroit Ball Bearing Co., 110 W. Alexandrine Ave., Detroit.

Orr, A. William, Jr. (J) automotive engi-

# NEW MEMBERS Qualified

These applicants who have qualified for admission to the society have been welcomed into membership between March 15, 1941, and April 15, 1941.

The various grades of membership are indicated by: (M) Member; (A) Associate Member; (J) Junior; (Aff.) Affiliate Member; (SM) Service Member; (FM) Foreign Member.

### Baltimore Section

Freeman, Aaron (M) superintendent, buildings, supplies and motor equipment, Chesapeake & Potomac Telephone Co. of Baltimore City, 320 St. Paul Place, Baltimore. (mail) Elgin Ave. & Payson St.

Gray, Edward, Capt. (SM) U. S. Army, Ordnance Dept., Aberdeen Proving Ground, Md.

### Buffalo Section

Hsiung, David N. (J) Chinese inspector, Committee on Aeronautical Affairs of China, c/o Curtiss Aeroplane Division, Curtiss-Wright Corp., Kenmore Ave., Buffalo, N. Y. (mail) 109 Hoover St., Kenmore, N. Y.

### Canadian Section

Beauchamp, Paul (A) manager, treasurer, Bowes "Seal Fast" Co., Ltd., 103 John St., N., Hamilton, Ontario.

Cooke, Philip N. (A) sales manager, Norton Co. of Canada, Ltd., Hamilton, Ontario (mail) 3 Beach Rd.

Davis, Lloyd J. (A) district manager, Sealed Power Corp. of Canada, Ltd., 436 Wellington St., W., Toronto, Ontario (mail) 356 Prince Edward Dr.

Fowler, Alexander Murray (A) manager, industrial sales, Imperial Oil, Ltd., 56 Church St., Toronto, Ontario.

Jones, Frederick Lyndon (A) owner, Jones Bros. Garage, Port Stanley, Ontario (mail) P. O. Box 126.

McCoy, D. Bertram (A) assistant sales

manager, Steel Co. of Canada, Ltd., Hamilton, Ontario.

White, William Henry Cecil (A) automotive engineer, Sun Oil Co., Ltd., 29 Basin St., Toronto, Ontario.

### Chicago Section

Burgott, Arthur Glenn (J) student engineer, Bendix Products Division, Bendix Aviation Corp., 401 Bendix Dr., South Bend, Ind. (mail) 2419 Lincoln Way, W.

Burke, Sylvan Eugene (J) junior designer, Bendix Aviation Corp., South Bend, Ind. (mail) 737 Cottage Grove.

Randall, Clark C. (M) automotive engineer, Sinclair Refining Co., 2540 W. Cermak Rd., Chicago.

### Cleveland Section

Bubb, H. D., Jr. (M) chief engineer, Thompson Products, Inc., 2196 Clarkwood Rd., Cleveland.

Getz, A. G. (M) chief engineer, Bishop & Babcock Mfg. Co., 4901-4915 Hamilton Ave., N. E., Cleveland.

Jacobus, Harland E. (J) engineer, aircraft pump department, Thompson Products, Inc., 2196 Clarkwood Rd., Cleveland (mail) 12427 Saywell Ave.

Kanuch, George (J) draftsman, Pump Engrg. Service Corp., 12910 Taft Ave., Cleveland (mail) 3215 Barber Ave.

Kanuch, John (J) chief draftsman, Pump Engrg. Service Corp., 12910 Taft Ave., Cleveland (mail) 3698 W. 116th.

McQuat, Ralph H. (M) vice president,

neer, Holley Carburetor Co., 5930 Vancouver Ave., Detroit.

Rehm, Harold W., Lieut. Col. (SM) U. S. Army, Ordnance Dept., Detroit Ordnance Plant, Detroit.

Reynolds, C. H. (A) president, Sheffield Gage Corp., Room 705, 7310 Woodward Ave., Detroit.

Roberts, Fred T. (A) service and sales representative, Budd Wheel Co., 12141 Charlevoix, Detroit.

Smith, Bruce A. (J) standards engineer, General Motors Corp., 15-157 General Motors Bldg., Detroit.

Starnes, Ronald E. (J) engineering, Mather Spring Co., Wolcott Blvd., Toledo, O. (mail) 1014 Parkside Blvd.

Thompson, Wilbur C. (J) branch manager, Detroit Ball Bearing Co., 127 S. Water St., Saginaw, Mich.

Whisler, Ralph H., Jr. (A) sales engineer, Monroe Auto Equipment Co., 1426 E. First St., Monroe, Mich. (mail) 2348 Hollywood Dr., R.F.D. No. 4.

Wilson, Earl R. (M) assistant resident engineer, Chevrolet Motor Division, General Motors Corp., 300 N. Chevrolet Ave., Flint, Mich.

#### Indiana Section

Ansted, William B., Jr. (A) president, Metal Auto Parts Co., Inc., 1428 W. Henry St., Indianapolis.

Cosper, Dale L. (J) body draftsman, International Harvester Co., Motor Truck Division, Fort Wayne, Ind. (mail) 716 E. Fifth St., Auburn, Ind.

Drexler, Charles (A) proprietor, Charles Drexler Co., Indianapolis (mail) 425 Harmon St.

Ford, G. H. (M) manager, test and proving division, Marmon-Herrington Co., Inc., Indianapolis.

Lituchy, Noel J. (J) test engineer, Allison Division, General Motors Corp., Indianapolis (mail) 1649 N. Alabama St.

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Olender, Frank J. (J) draftsman, International Harvester Co., Inc., Fort Wayne, Ind. (mail) 2110 Wells St.

Robinson, Kenneth Irving (J) dynamometer operator, International Harvester Co., Fort Wayne, Ind. (mail) 226 E. Washington Blvd.

Schuman, Chester Dean (M) engineer, Metal Auto Parts Co., Inc., 1428 W. Henry St., Indianapolis.

Westlund, A. F. (M) 1st vice president, plant manager, Mouldings, Inc., 741 E. Market St., Indianapolis.

#### Metropolitan Section

Beggs, Alan H. (A) vice president, Palnut Co., Inc., 61 Cordier St., Irvington, N. J.

Carry, William J. (M) executive engineer, B. G. Corp., 136 W. 52nd St., New York City (mail) 28 Parkwood Dr., W., Valley Stream, L. I., N. Y.

Chandler, William Heywood (J) experimental engine tester, Wright Aeronautical Corp., Beckwith Ave., Paterson, N. J. (mail) 183 Goffe Hill Rd., Midland Park, N. J.

Cimborsky, Louis (A) industrial maintenance inspector, Cummins Diesel Engine Corp., 724 Garrison Ave., New York City (mail) 42-25 Layton St., Elmhurst, L. I., N. Y.

Droge, Henry N. (J) sales engineer, Kollsman Instrument Division, Square D Co., 80-08 45th Ave., Elmhurst, L. I., N. Y.

Dugan, Francis A. (M) designer, Lawrence Engrg. & Research Co., Linden, N. J. (mail) One 74th St., Brooklyn, N. Y.

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Effinger, William L., Jr. (J) president, Berkeley Models, Inc., 230 Steuben St., Brooklyn, N. Y. (mail) 53 Berkeley Pl.

Foell, Charles F. (M) assistant editor, Diesel Publications, Inc., 192 Lexington Ave., New York City.

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Gundlach, Frank A. (M) technical supervisor, National Carbon Co., Inc., 30 E. 42nd St., New York City.

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**Scheifele, Ernst** (M) partner, Aero Trades Co., Roosevelt Field, Mineola, L. I., N. Y.

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**Suda, Stanley** (J) inspector, U. S. Army, Air Corps, c/o Wright Aeronautical Corp., Paterson, N. J. (mail) 20-46 29th St., Astoria, L. I., N. Y.

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**Wynne, Gerald A. W.** (A) naval purchasing agent, British Purchasing Commission, 15 Broad St., New York City.

**Zabriskie, A. Eugene** (J) tool designer, Mergenthaler Linotype Co., 43 Hall St., Brooklyn, N. Y. (mail) 63 Prospect St., Jersey City, N. J.

**Zino, Anthony Joseph, Jr.** (A) lubrication engineer, New York sales manager, Lubri-Zol Corp., Cleveland (mail) 136 Geranium Ave., Floral Park, L. I., N. Y.

#### **Milwaukee Section**

**Berger, Ray A.** (M) design of industrial power units, Waukesha Motor Co., Waukesha, Wis. (mail) 204 Windsor Dr.

**DeLong, Roger G.** (J) sales engineer, Twin Disc Clutch Co., Racine, Wis. (mail) 1618 College Ave.

**Trautwein, Kendall E.** (A) sales engineer, S K F Industries, Inc., 6119 Plankinton Bldg., Milwaukee.

**Wright, Leo George** (A) foreman, City of Milwaukee, Municipal Garage, 834 N. Market St., Milwaukee.

#### **New England Section**

**Fischer, Leander J.** (M) supercharger research engineer, General Electric Co., 920 Western Ave., Lynn, Mass. (mail) 19 Ocean St., Nahant, Mass.

**McAllister, Donald** (A) mechanical engineer, Worthington Pump & Machinery Corp., Holyoke, Mass. (mail) 195 Bliss Rd., Longmeadow, Mass.

**Orlowski, Joseph** (J) installation engineer, Atlas Imperial Diesel Engine Co., Homer's Wharf, New Bedford, Mass. (mail) 74 James St., Acushnet, Mass.

#### **Northern California Section**

**Dacus, Hugh** (A) president, Dacus Oil Co., 782 Minnesota St., San Francisco.

**Nash, Ivan H.** (M) foreman, experimental engine laboratory, Caterpillar Tractor Co., Davis & Martinez Sts., San Leandro, Calif. (mail) 686 Maple Court.

#### **Northwest Section**

**Kuhe, Harry** (M) division manager, Ethyl Gasoline Corp., 1411 Fourth Ave., Seattle, Wash.

#### **Oregon Section**

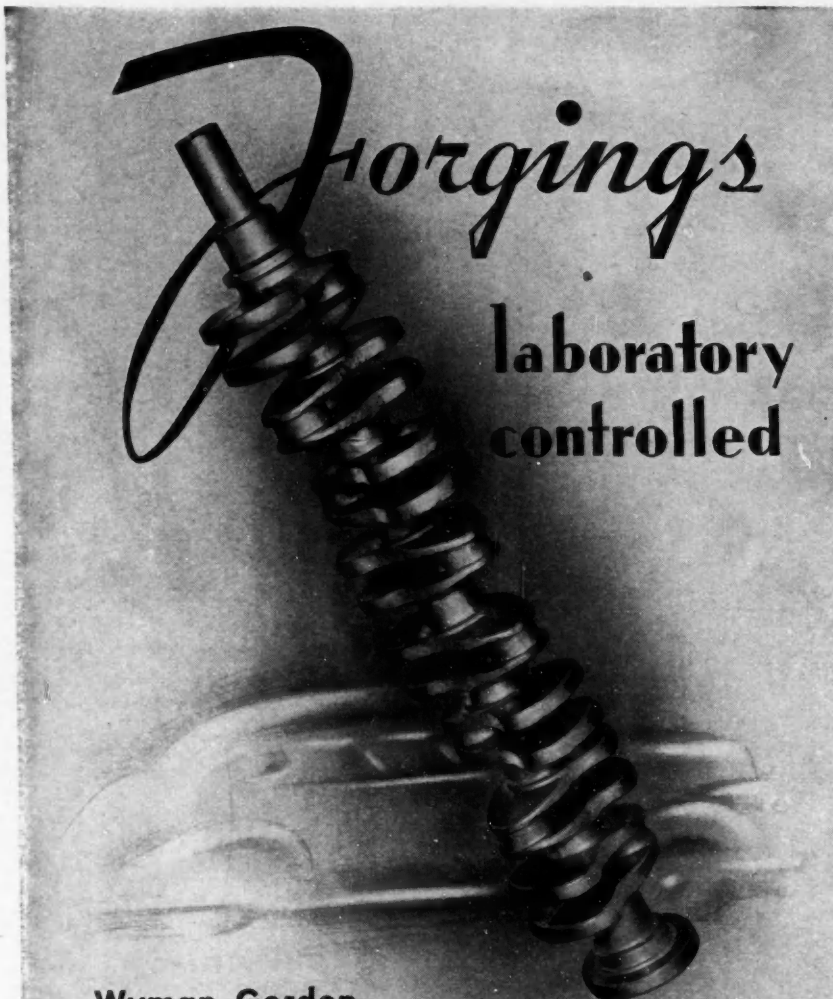
**Ohler, George H.** (A) president, Automotive Products, Inc., 1511 S. E. Grand Ave., Portland, Ore. (mail) 836 N. E. 23rd.

#### **Philadelphia Section**

**Noble, Herbert J.** (M) chief metallurgist, Jacobs Aircraft Engine Co., Pottstown, Pa.

**Smith, John H.** (A) charge of traffic and automotive maintenance, Esslinger's Inc., Tenth & Callowhill Sts., Philadelphia (mail) 4127 Ridge Ave.

**Tynan, Thomas G.** (A) manager, automobile manufacturing sales, Electric Storage Battery Co., 19th St. & Allegheny Ave., Philadelphia.



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Evancho, Michael (A) automotive theory and mathematics instructor, Pittsburgh Board of Education, Connelley Vocational High School, Pittsburgh.

Stewart James P. (M) assistant manager, blower department, Elliott Co., Jeanette, Pa.

#### St. Louis Section

Kohr, Bradley G. (J) instructor, Parks Air College, Inc., East St. Louis, Ill.

#### Southern California Section

Ager, Harold Weiler, Jr. (J) automotive engineer, Richfield Oil Corp., 555 S. Flower St., Los Angeles (mail) 830 Cherry Ave., Long Beach, Calif.

Curtis, W. H. (M) president, Curtis Pump Co., 8 Norwood Ave., Dayton, O. (mail) 5640 Franklin Ave., Hollywood, Calif.

Grady, Edward C. (A) salesman, special accounts, Standard Oil Co. of California, 605 W. Olympic Blvd., Los Angeles (mail) 3456 Rosemary Ave., Glendale, Calif.

Locklin, Paul (M) west coast manager, Parker Appliance Co., Cleveland (mail) 757 W. Venice Blvd., Los Angeles.

Peterson, Joseph James (A) chief engineer, engine division, Fletcher Aviation Corp., 625 N. San Fernando Rd., Burbank, Calif. (mail) 215 W. Lomita, Glendale, Calif.

Schwendener, Karl D. (J) project engineer, Librascope, Inc., 72 N. Tujunga, Burbank, Calif. (mail) 364 Patterson Ave., Glendale, Calif.

Seidel, Gus A. (A) chief inspector, Hughes Aircraft Co., 7000 Romaine St., Hollywood, Calif. (mail) 1164 B. Alameda St., Glendale, Calif.

Starkey, Charles W. (A) supervisor, chemical and specialty division, General Petroleum Corp of California, 2525 E. 37th St., Los Angeles.

Sturgis, Winston O. (J) draftsman, Douglas Aircraft Co., Inc., Santa Monica, Calif. (mail) 1737 S. Highland Ave., Los Angeles.

Westermeyer, Warren Frederick (J) project engineer, Menasco Mfg. Co., Burbank, Calif. (mail) 1151½ W. 29th St., Los Angeles.

Young, Garth L. (M) chief engineer, Signal Oil & Gas Co.; Signal Oil Co., 811 W. Seventh St., Los Angeles.

#### Southern New England Section

Baldwin, James P. (M) general superintendent, Corbin Screw Corp., New Britain, Conn.

du Pont, Stephen (J) head, experimental department, Indian Motorcycle Co., State St., Springfield, Mass.

Gordon, W. A. (M) engineer, Farrel-Birmingham Co., Ansonia, Conn. (mail) 82 Myrtle St., Shelton, Conn.

Prohaska, Bradley Jackson (J) engine tester, Pratt & Whitney Division, United Aircraft Corp., East Hartford, Conn. (mail) 6 Pratt St.

Rice, Wilbur Currier (J) assistant to chief tool designer, Pratt & Whitney Aircraft Division, United Aircraft Corp., Main St., East Hartford, Conn. (mail) 168 Main St., Manchester, Conn.

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Thomas, Kenneth Funston (M) district sales engineer, S K F Industries, Inc., 211-212 Capitol Bldg., Hartford, Conn. (mail) 65 Argyle Ave., West Hartford, Conn.

Vickery, Bruce T. (J) test engineer, Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn. (mail) 525 S. Main St., Mansfield, Mass.

Williamson, Ralph G. (A) automotive engineer, Socony-Vacuum Oil Co., Inc., Manchester, N. H. (mail) 100 Island Pond Rd.

#### Syracuse Section

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Roth, Carl F. B. (A) general sales manager, Aircooled Motors Corp., Liverpool Rd., Syracuse (mail) 804 James St.

#### Washington Section

Ebaugh, Irvin Atwood (SM) associate engineer (materials), U. S. Navy Dept., Bureau of Ships, Washington (mail) 3603 Russell Pl., Alexandria, Va.

Wechsler, Laskar (J) junior mechanical engineer, U. S. Navy Dept., Bureau of Ships, Washington (mail) 6323 Luzon Ave., N.W.

#### Wichita Group

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### Outside of Section Territory

Adamson, Harry, Lieut. Col. (SM) commanding officer, U. S. Army, 7th Corps Area Motor Transport Depot, Fort Crook, Nebr.

Ginn, Earl (M) vice president, chief engineer, commercial engines, Continental Motors Corp., 205-215 Market St., Muskegon, Mich.

Ripley, Michael E. (J) Technical Sergeant, U. S. Army, Co. D, 67th Q.M. Battalion (LM), Fort Bragg, N. C.

Sherman, Coolidge (A) sales department, Allegheny Ludlum Steel Corp., Watervliet, N. Y.

Taylor, Charles E. (M) engineer and general manager, Taylor Sales Engrg. Co., Elkhart, Ind. (mail) 117-123 W. Franklin St.

### New England Section

Conley, E. T., Jr., Captain, U. S. Army, Headquarters VI, Army Corps, Providence, R. I.

### Northwest Section

Collins, George Chester, district sales manager, Thompson Products, Inc., Cleveland, Ohio. Mail: 4204 11th Ave. N.W., Seattle, Wash.

Davies, Claude W., head sales engineer, Standard Oil Co. of California, Seattle, Wash.

Stein, John P., secretary, treasurer and manager, Dependable Tank Transport, Inc., Seattle, Wash.

### Oregon Section

Stuart, Kenneth Jerome, service and maintenance supervisor, Fleet Sales Division, General Motors Sales Corp., San Francisco, Calif. Mail: 1201 Southeast Third Ave., Portland, Ore.

### Philadelphia Section

Berry, Ethan A., works manager, Wisahickon Tool Works, Bala-Cynwyd, Pa.

Hafer, Paul R., president, Boyertown Auto Body Works, Inc., Boyertown, Pa.

### Pittsburgh Section

French, Chester O., Jr., district automotive engineer, Socony-Vacuum Oil Co., Inc., McKees Rocks, Pa.

### Southern California Section

ApRoberts, James Percy, engineer, Lockheed Aircraft Corp., Burbank, Calif.

Gardner, Floyd, automotive shop teacher, Frank Wiggins Trade School, Los Angeles.

Godknecht, Russell A., design engineer, Aircsearch Mfg. Co., Glendale, Calif.

Humes, Richard E., Vega Airplane Co., Division of Lockheed Aircraft Corp., Burbank, Calif.

Londelius, J. C., engineer, Douglas Aircraft Co., Inc., Santa Monica, Calif.

Roberts, Ned Louis, shop liaison engineer, junior, Vega Airplane Co., Division Lockheed Aircraft Corp., Burbank, Calif.

Walters, Lawrence, Jr., service engineer, Harlow Aircraft Co., Alhambra, Calif.

### Southern New England Section

United Aircraft Corp., East Hartford, Conn.

### Syracuse Section

Burrows, William F., experimental engineer, Aircooled Motors Corp., Syracuse, N. Y.

### Washington Section

Burgan, Wilfred G., chief engineer, Motor Transport Division, U. S. Government, War Department, Washington, D. C.

Gordon, Kenneth Craig Gilmour, assistant technical manager, Aeronautical Chamber of Commerce of America, Washington, D. C.

Teckemeyer, Oscar W., associate equipment engineer, Fish & Wildlife Service, Department of the Interior, Washington, D. C.

### Outside of Section Territory

Buchanan, Norman, service engineer, The A. C. F. Motors Co., Dallas, Texas.

Chombart, Louis Gerard, research and development engineer, Schlumberger Well Surveying Corp., Houston, Texas.

Haas, Lowell E., instructor, University of Oklahoma, Norman, Okla.

Reed, C. B., chief engineer, assistant operating manager, Continental Air Lines, Inc., Denver, Colo.

Reeves, Thomas, development engineer, Continental Motors Corp., Muskegon, Mich.

Zurawinski, Mitchell, project engineer, Cessna Aircraft Co., Wichita, Kansas.

## APPLICATIONS Received

The applications for membership received between March 15, 1941, and April 15, 1941, are listed below. The members of the Society are urged to send any pertinent information with regard to those listed which the Council should have for consideration prior to their election. It is requested that such communications from members be sent promptly.

### Baltimore Section

Greaves, Gennard Alban, Lt.-Col., U. S. Army, Quartermaster Depot, Camp Holabird, Baltimore.

Johnson, William B., Lt.-Col., U. S. Army, War Department, Holabird Quartermaster Depot, Baltimore.

Lawes, Herbert J., Lt.-Col., U. S. Army, War Department, Holabird Quartermaster Depot, Baltimore.

### Buffalo Section

Bush, John F., Jr., vice president and general manager, Puritan Co., Inc., Rochester, N. Y.

Walters, Wilson G., junior engineer, Sterling Engine Co., Buffalo, N. Y.

### Cleveland Section

Gerber, Robert Ernest, layout man, The Thew Shovel Co., Lorain, Ohio.

Larson, James Edward, detailer, The Thew Shovel Co., Lorain, Ohio.

Mesenhimer, Orland L., mechanical engineer, U. S. Navy Department Bureau of Ships, c/o General Motors Corp., Cleveland.

Mulcahy, B. Mark, editor, Thompson Products, Inc., Cleveland.

Newton, John Anthony, service engineer, Thompson Products, Inc., Cleveland.

Riley, Edward Paul, chief chemist, Thompson Products, Inc., Cleveland.

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### Chicago Section

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Milz, Harold, chief engineer, Mercury Mfg. Co., Chicago.

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### Dayton Section

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### Detroit Section

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### Indiana Section

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### Metropolitan Section

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Hewitt, John Vance, Jr., engineer, Wright Aeronautical Corp., Paterson, N. J.

Donaldson, John Shearman, research engineer, Donaldson Piston Corp., New York.

### Milwaukee Section

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Stephen, James, chief engineer, Highway Trailer Co., Edgerton, Wis.

Wood, Harry Francis, designing layout draftsman, Nash Motors Division, Nash-Kelvinator Corp., Kenosha, Wis.

Yokel, Edward, designer, Twin Disc Clutch Co., Racine, Wis.

